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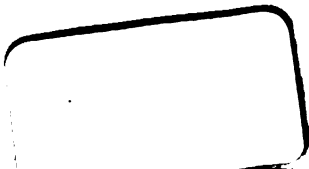
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SIXTH ANNUAL REPORT
OF THE
PHILIPPINE COMMISSION.
1905.

(IN FOUR PARTS.)

PART 3.

BUREAU OF INSULAR AFFAIRS : : WAR DEPARTMENT.



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**ANNUAL REPORT OF THE DEPARTMENT OF COMMERCE
AND POLICE FOR THE YEAR ENDING JUNE 30, 1905.**

REPORT OF THE DEPARTMENT OF COMMERCE AND POLICE.

MANILA, *November 3, 1905.*

GENTLEMEN: I have the honor to make the following report of the operations of the various bureaus of the department of commerce and police during the fiscal year ending June 30, 1905:

BUREAU OF PHILIPPINES CONSTABULARY.

The enlisted strength of the constabulary on June 30, 1905, was 6,967 men and 327 officers, an increase of 17 men and 39 officers over the preceding fiscal year. The total cost of operations was ₱4,133,367.08 for the fiscal year 1905, as against ₱3,781,952.10 for the fiscal year 1904, an increase of ₱351,414.98, or 9.3 per cent.

In considering the cost of the constabulary as at present maintained it must be borne in mind that there have hitherto been attached to this bureau many functions which are not properly part of their expense. The most important of these is the telegraph division, which accounts for ₱391,973 of their appropriation, or almost one-tenth, and is the total expense to the insular government of running telegraphs, telephones, and cables throughout the archipelago, the receipts from this source not having been credited to offset this amount. The constabulary has done more or less transportation business, notably a stage line from Dagupan to Baguio, and have kept commissary stores not only for the benefit of their own men, but in the provinces for the benefit of all insular and provincial employees, and in a very few instances this privilege has been extended to other people where there seemed to be no other way for them to get their supplies.

It is not fair to deduct from the appropriation for the constabulary the cost of these items without adding certain other costs which have not been charged, such as service performed for them by other bureaus, as the bureau of printing, the bureau of posts, and the bureau of coast guard and transportation. The transportation by water has not been charged to the different bureaus, nor had a price for the service been fixed during the last fiscal year, so that that figure can not be very accurately computed. Deducting the cost of the telegraph service, supplying commissaries to insular and provincial officials, maintaining the Baguio stage line, and transporting provincial prisoners, and adding the cost of the printing and posts, the real cost, exclusive of service performed by the bureau of coast guard and transportation, of the constabulary for the year 1904 was ₱3,493,652 and for the year 1905 was ₱3,711,394, an increase of ₱217,742, or 6½ per cent.

At the time of the last annual appropriation it was hoped to reduce the constabulary to an enlisted strength of 6,000 men, this reduction to become effective during the last half of the fiscal year, but circumstances delayed this reduction until the time of present writing.

In July, 1904, an outbreak of the hill people in Sámar took place, which gradually assumed formidable proportions. A most careful analysis has been made of the cause of this trouble, and none of the investigations indicated a political significance to the movement. A canvass of the municipal presidentes of Sámar elicited many different opinions as to the cause, but the real trouble seems to have been dissatisfaction on the part of the people of the interior with the exactions and illtreatment given them by the people in control of the towns at the seaboard. They did not get a fair price for their hemp and other products, and had to pay exorbitantly for the simple things which they wished to buy, thus preventing their getting a fair return for their honest labor. The feeling of discontent among these people caused by these conditions was readily fanned into flame by a few agitators, who told the credulous and ignorant inhabitants of the interior that the government was planning to tax them ₱25 apiece as a cedula or poll tax and ₱30 for a land tax. The leaders took on religious names rather than political. They had a "pope," who supplied the soldiers with charms called "anting-anting," which they were told rendered them invulnerable to bullets, and that they must not mind if their comrades or themselves appeared to die, as within three days they would come to life again. Implicitly believing these promises, the people banded together in large numbers, armed with bolos and, aided by the rugged mountains and the dense jungle which abound in Sámar, they made a very fierce and dangerous enemy to the troops and to the peaceful people who did not want to join them.

Taking as their stronghold the middle of the northern section of the island among the mountains, they descended at will upon any one of a dozen cities never more than 30 or 40 miles away and created a reign of terror and of bloodshed. When they entered a town they burned the houses and killed the people indiscriminately, sparing not even the women and children.

The constabulary and scouts operated against these people at a disadvantage. They were armed with Springfield carbines, which, having no magazines, they had to reload by hand after each shot. The effect of this was that they were able to get only one or two shots before the fanatics, concealed by the dense vegetation until within a few feet, would rush in and overwhelm them with numbers; and thus, armed only with bolos, in several instances they beat off the attack, of their better-armed adversaries. In two instances the Thirty-eighth Company of Scouts were severely dealt with, the first time at Orás, 13 being cut down in a bolo rush, and later at Dolores, on the east coast, Lieutenant Hayt and 37 of his men were killed.

Reenforcements of constabulary from many of the other provinces were hurried to Sámar, and several companies of scouts requested from the military authorities for detail to this service and others already detailed to the civil government were sent as reenforcements.

As a result of instructions issued by Major-General Corbin, at the request of the governor-general, on December 29, 1904, United States infantry troops were sent to garrison the towns of Llorente, Oras, Taft, Tarangunan, and Bulao. General Corbin's instructions were

to repel any attack or threatened attack by pulajanes upon the cities or barrios in which they were garrisoned or in the neighborhood. They undertook practice marches, which also served to make their presence known. This prompt cooperation on the part of the commanding general was of the greatest service to the constabulary and scouts. It enabled them to use all of their forces for their expeditions, as their base of supplies and the people who had been friendly to them in the coast towns were amply protected and therefore did not require a garrison.

Improvement, however, was very slow. A large body of troops could march for days without seeing any signs of lawlessness except possibly the blackened posts and devastated country where the towns had stood. On the other hand, small parties frequently developed a large force of antagonists, and many very sharp engagements took place, in many of which the pulajanes were severely punished. On December 15, 1904, Brigadier-General Allen, chief of constabulary, took charge in person, but after five months of service found the continuous strain of the campaign had proved too much for the constabulary organization, which could not be reenforced without drawing officers and men needed for the maintenance of order in other provinces. Accordingly, on May 21, 1905, he telegraphed the governor-general recommending that the east and northeast coast be turned over to the military authorities to handle. This was immediately done and the constabulary withdrawn from that section of the island, the scout companies operating in Samar being returned to the direction and control of the military.

In the course of these operations a great deal of distinguished service was performed by officers and men, both of the army and of the constabulary. Capt. Cary I. Crockett, of the constabulary, had a desperate hand-to-hand combat with a force of pulajanes and fell, severely wounded, under the dead bodies of his assailants. He was wounded later in leading his troops against pulajanes on the east coast.

On May 17, 1905, Col. Wallace C. Taylor, assistant chief of Philippines Constabulary, conducting field operations on the east coast of Samar, was desperately wounded in the jaw and was only gotten to the hospital in time to save his life. He had barely recovered from the wound when he went back to work with his usual vigor and efficiency.

On April 8, 1905, Governor Curry, of Isabela Province, was appointed provincial governor of Samar, and put in complete charge with an almost free hand in the island. With his excellent work the military and constabulary cooperated admirably and some decisive results were secured. American soldiers, armed with repeating rifles and bayonets, were better able to cope with the situation, and within a few weeks after moving in they had surprised and killed a leader of the movement, Dagojob, and carried the work of pacification to an extent that gave promise of an early end to all trouble.

The few pulajanes left now found it advantageous to move over to the west coast, which was guarded by constabulary, and here another of their leaders, Alugar, met his death, and many of the lawless element surrendered. General Allen had offered an armistice to all those who came in and were not officers, and received many surrenders. This policy has been continued by General Carter. Gov-

ernor Curry is rapidly gaining the confidence of all the people of his island. He talks Visayan, is just, energetic, and tactful and entirely in earnest, and it is believed that the further pacification of the island is merely a matter of extending his influence and carrying out the policy he has inaugurated. He is proposing to create new towns or centers of activity in the interior, which will be ruled as are the cities in provinces organized under the special provincial act, and will enable him to get the people educated and give them an opportunity to cultivate the soil and develop the great resources of the interior.

During the fall of 1904 the ladron leaders who had been lurking in the fastnesses of Cavite and Batangas and in the neighborhood of Manila began to show much more activity. They grew bolder, established a system of taxation by which everyone within their reach was mulcted as much as they thought he could pay, from 1 peso for a man and 5 pesos for each carabao to larger sums, running into the hundreds of pesos, from the hacenderos, or owners of plantations. They established an "underground" system of communication, maintained by agents known as "inahins." Their collections were largely made by intimidation, and they threatened those who didn't pay or who reported their operations with punishment so horrible that most of the people found it easier to pay and keep quiet about it than to run the risk of torture or mutilation if they refused or told. The schedule issued by one of these leaders provided punishment of death for anyone who took office under the American Government; punishment of cutting off the lips of anyone who gave information to the Americans; cutting the tendons of the feet, thus rendering them cripples for life, if they guided the American troops, and crushing the fingers, which they did by pounding them with rocks, if they gave supplies to the Government troops. A few examples of the effect of this kind of punishment are now living in the neighborhood of Manila, and in the towns where they live it is not surprising that people should be unwilling to take any chances of being dealt with in a similar manner.

A very small number of these bands grew and flourished in two of the forty-odd provinces until their own successes rendered them foolhardy and they began operations on a larger scale. In December they descended on the town of Parañaque, about 7 miles from Manila, and entering the constabulary cuartel, captured a number of arms, killed 1 man who resisted, and wounded others. On January 15, 1905, several bands, having joined and increased their number by several hundred volunteers, marched into the town of Taal, in the province of Batangas, looted the municipal treasury of ₱15,000, and carried off 25 guns, the whole equipment of the municipal police, 1 of whom only was killed. On January 24 a raid was made on the town of San Francisco de Malabón, in Cavite. The ladrones were dressed in the costumes of constabulary and scouts, some of which they had captured and some of which they had made, and came marching into the town about dusk, simulating Government troops. When close enough to be challenged, they rushed the cuartel, or barracks, and possessed themselves of 21 guns. In the fight that ensued, 12 of the ladrones were killed, and 1 of the constabulary. Dr. J. O'Niell, an American medical officer attached to the scouts, was shot and killed while escorting his wife and daughter into the cuartel.

The outlaws made an insistent effort to capture Señor Mariano Trías, a gentleman of high distinction in the province of Cavite, who had been prominent in the insurrection against the Americans and after his surrender had become the provincial governor of the province of Cavite. Señor Trías was a man of high character and of prominence and importance among his people, and escaped only by concealing himself in the river. His wife and children were carried off by the outlaws and held several weeks in their custody until the insistence of the troops and constabulary was such as to render their further retention by the outlaws too onerous, when they were set at liberty.

These movements added greatly to the prestige of the ladrones, and made prompt and decisive action necessary. Accordingly, a provisional district was declared of four provinces—Cavite, Batangas, Rizal, and La Laguna. On January 31, 1905, the writ of habeas corpus was declared suspended in Batangas and Cavite. Major-General Corbin, commanding the Philippines division, whose hearty cooperation with the civil government in all matters was always to be depended upon, ordered the Third Squadron of the Second Cavalry and four companies of the Seventh Infantry, under Maj. F. W. Sibley, to take the field and assist the civil authorities in the restoration of order. The troops stationed in Batangas were also ordered to make practice marches throughout the infected region, and, in general, a very rigid campaign was undertaken. Colonel Baker, chief supply officer of the constabulary, was selected for this difficult work and placed in charge of the provisional district. He took up his headquarters at Lipa, in Batangas, and with masterful and tactful energy was soon in complete control of the situation. It would have been far too great a drain on the resources of the civil government to have endeavored to handle this situation wholly by constabulary, and the presence of American troops was of the very greatest value and showed the people that we were entirely in earnest. The Americans did not find that the natives liked the ladrones, but that they feared them, and, fearing them, were unwilling to help the authorities until assured of ultimate protection. It is natural that a property owner in Batangas should hesitate to give information as to the whereabouts of ladrones to the Americans, whom he has not yet learned to like, and with the certainty that his draft animals would be driven off, his buildings burnt, and possibly worse outrages perpetrated on the persons of himself or his family as soon as the ladrones had opportunity to wreak their vengeance. It was only found necessary to demonstrate to the people that the authorities were really in earnest; that the campaign was to continue until the leaders had been captured or killed, and that protection in the meantime would be accorded to those who demonstrated their loyalty. Thus assured, the response was ready, energetic, and complete. For weeks news was brought day by day from all parts telling exactly where this, that, or another ladrone leader has passed, and finally it got so that the American officers knew each day where the leaders had passed the night before. Soon the information began to come in of the intended movements, and the authorities got to know where these different men expected to stay, and finally one by one they fell into the toils, some being killed in action, others captured, and others, worried by the continued pursuit, came in and surrendered, pre-

ferring to take the chance of the courts to the certainty of dogged pursuit, with the rain of bullets into the camp at dawn, that had characterized the last weeks of their outlaw life.

It is characteristic of criminals never to own themselves to be outlaws, living by what they could plunder. Fantastic designations and uniforms were prepared, and in the provisional district they called themselves generals, colonels, majors, etc., of the Philippine army, which they declared to be fighting for independence. Leading Filipinos in Manila and in the provinces affected, the provincial governors and men who were distinguished in the insurrection against the United States Government during the years from 1899 to 1902, declared that there was no real political significance attached to these *ladrones*; that the men in charge were neither men of weight nor standing in the Filipino community, and that the purpose of this movement was purely personal aggrandizement and loot and their methods were intimidation and theft. It is certain that the leaders seldom or never occupied points of danger in the various engagements. They had never been shot down nor were they apt to be seen. The occasions when a leader has been killed have been when the band was surprised or ambushed.

In Cavite special mention should be made of the fine service of Maj. F. W. Sibley, of the Second Cavalry. The position was a very difficult one, as the province had not been turned over to the control of the military authorities and he was asked to cooperate with the constabulary officers and with the provincial governor, himself an army officer but his junior in the Regular Army. That this campaign was carried through to its entirely successful completion without friction and with thorough harmony throughout is the best testimony of the tact and disinterestedness of Major Sibley.

At the beginning of this year 35 companies of scouts had been transferred for service with the civil authorities and were so serving. At the close of the fiscal year this number was 27. The scouts have given faithful and efficient service and are entitled to the greatest credit for what they have accomplished during the year.

Any comparison of the work of the constabulary and scouts or American troops is unnecessary and is apt to be unjust. Their work, while similar in some respects, is wholly different in others. It is not the business of the Regulars nor of the scouts to receive surrenders, which were very properly made to the officer in charge of the constabulary. It is he that was handling the situation, and it was he who designated the terms upon which surrenders would be received. The fact that over 512 firearms were captured or surrendered in the provisional district during this period is ample evidence of the necessity of the campaign. The fact that the constabulary received the bulk of these arms had no significance, as it was to be expected that they would. The work of the constabulary was, however, admirable. They were untiring, their results kept coming, their officers worked vigilantly, continuously, and with great patience in spite of harassing trials and disappointments. Detachments were moved in from other provinces until the forces numbered nearly 1,200 men. Among the number were 50 Moros and 50 Igorots who proved themselves to be excellent fighters and very determined officers of peace. During the heat of this campaign a very concerted and virulent attack upon the constabulary was made by a number of

papers printed in Spanish and Tagalog, and barely a day passed without the publication of some article aimed against the constabulary, charging them, though usually indirectly, with abuses of the most revolting nature. Some went so far as to demand the abolition of the force and others to say that the whole constabulary was a total failure and that they would prefer to return to military service. It is believed that there was a special reason for this sudden and ill-timed attack upon those who were making every effort for the establishment of law and order and the protection of the home. Most rigid analysis of each specific case, searching methods of inspection, and severe discipline failed to disclose sufficient ground for this sudden attack. The cases cited were greatly exaggerated. In some instances abuses had existed, and the authorities were not slow in dealing out punishment, the officers concerned where abuses were proven being discharged, and a number of men who had done no wrong were given a chance to resign, as they were considered undesirable.

Wages offered constabulary officers had not been sufficiently attractive to insure getting the best men in every instance. Accordingly, on September 11, 1905, an act was passed by the Commission increasing the pay on an average of \$150 a year to each officer and giving a "fogey," as it is called, of 10 per cent increase in pay for each five years of service. The appointment of a board to investigate the personnel of the constabulary, with the idea of eliminating all undesirable members, together with the announcement of the additional compensation to constabulary officers, should materially improve the class of men available for this service.

Throughout the rest of the archipelago the improvement has been marked and continuous during the year.

In Negros Lieut. J. S. Mohler, with a detachment of constabulary, surprised and killed "Papa," or "Pope," Isio, who had terrorized his neighborhood for sixteen years. This had a very quieting effect on that island, and there is very little armed lawlessness left.

In Leyte there have been a few pulajanes, and very great vigilance has been necessary to keep the trouble in Sámar from spreading across the narrow straits which separate the two islands and infecting its rich and prosperous neighbor. In Leyte, however, most excellent feeling prevails. The people have elected a constabulary officer to be their governor, the only case of this kind in the archipelago, and he has succeeded in improving the conditions in his province until now there is comparatively no armed lawlessness.

In Cebú there are few ladrones, and the protracted drought this year has caused a scarcity of food and a failure of crops to such an extent that there have been occasional disturbances. The constabulary are very active there, very well led, and it is believed will be able to quiet things very effectually. There are said to be only four guns in the hands of ladrones. Their method of procedure seems to be for a small band of half a dozen men, with the four real guns and perhaps a few imitation ones, to enter a small village and threaten the inhabitants if they don't join, and thus augmented they go on from village to village, increasing their force till they are ready to raid a town and carry off the booty, the leaders and inciters going ahead on the return and always getting away, while the unfortunate "volunteers" are the ones who are caught and punished for the raid.

In Panay conditions have also improved. It is there a matter really for secret-service people and arrests by peace officers rather than any movement of armed men. In the mountainous parts there are a few people with a predatory taste, but they have been greatly lessened, and it is believed that the advent of the railroad will effectually drive them out. The constabulary of the Moro Province have done eminently satisfactory work and have been treated with the utmost consideration by the military authorities and participate in their movements and operations.

Throughout the first district unquestioned peace prevails, with the exception of the provisional district. In the second district during the year practically the last vestige of armed resistance to authority has been wiped out, and in the fourth district, comprising the northern part of Luzón, the small number of 600 men has maintained admirable peace, except such raids between wild tribes as have always existed and which have not been entirely stopped nor will be until education has had an opportunity to reach the farthest barrios.

The trouble in Sámar and in Cavite and Batangas prevented the reduction of the constabulary to 6,000 men in the last half of the fiscal year. The close of the fiscal year found us with 17 more enlisted men than were on the rolls at the close of the preceding year. Bettered conditions, military assistance in Sámar, and, above all, the improved quality and experience of the officers has enabled the government to take active steps toward a very material reduction of the constabulary, and, unless unforeseen contingencies arise, it is hoped that by the beginning of the calendar year 1906 the force will number very little over 5,000 men. This reduction will save much more than the amount necessary to provide for the increased pay of the officers.

There has been some discussion as to the future of the constabulary and some talk of the advisability of turning them over to the command of the commanding general of the Philippines Division or of abolishing the force altogether and leaving the maintenance of peace in the hands of the municipal police on the one hand and under the commanding general on the other. It is hoped that no proposition of this kind will be entertained.

The maintenance of order once established is purely a civil function. The almost universal experience throughout the archipelago is that the municipal police have not yet been developed to a point where they can be trusted with the maintenance of order in the provinces. Attention is called to the report of the officer in charge of the second district on the efficiency of the municipal police. The opinion of 16 prominent officials, including all the governors in his district, is here given. Fourteen of these are to the effect that the municipal police are at present utterly incapable of the maintenance of order. The control always goes with the power of payment, and even were the direction of the municipal police turned over to the insular officials, the governor-general could not be properly responsible for the maintenance of order where the funds to pay his forces had to be voted by municipal boards. To abolish the constabulary and transfer the work of maintaining order to the military authorities would be open to two objections. First, the bulk of the work of the constabulary is of a purely civil nature and would require a subdivision

of the forces to an extent that would not be convenient for the maintenance of army discipline and drill, and, second, it deprives the governor-general of the real control over the officers charged with this duty. He could not discharge army officers or reward them by promotion, and the tour of service of two years would make a continually changing body of men, who would not have time to learn the native dialects or get that influence over the leading men with whom they are supposed to cooperate that can be had by long association and trust. These same arguments hold good against the use of scouts for the bulk of the constabulary service.

The year's further experience with the constabulary confirms the opinion expressed in the last annual report of this department that they are admirably fitted for the work which they are called upon to do, and with such improvement in the system as can be made administratively should perform in full measure the purpose for which they were created.

The total amount of ₱4,133,367.08 that the bureau cost in 1905 seems to be too large a tax upon the revenues of the government for this kind of service, and the measures adopted will result, it is hoped, in very materially reducing this amount.

For further details, attention is called to the reports of the chief and district chiefs of the Philippines constabulary hereto attached.

BUREAU OF ENGINEERING.

The bureau of engineering is charged with the important duty of making scientific investigations and surveys to determine the merit and necessity of proposed public improvements. The demand for this service is continuous and covers all the range of public necessity, from well boring to works to control the overflows of rivers in times of floods.

The improvement of the port of Manila has hitherto been handled as a separate office, the work of the bureau of engineering being made to include investigations of port works and the improvement of the ports at Iloilo and Cebú. On May 4, 1905, the Commission passed Act No. 1339, which practically created an office of port works out of the office for the improvement of the port of Manila and transferred to this office all of the duties of surveying and examination of ports and the supervision of the construction of the works in progress. This concentrates the functions of the bureau of engineering more properly upon land propositions, and the most important of these functions is the supervision of the public ways of the archipelago.

It is regrettable that since the American occupation the roads have been gradually falling into disrepair. This is due, it is believed, to the fact that the municipalities have not yet awakened to the responsibility which attaches to them of the maintenance of the roads within their own jurisdiction. Under the American idea of government the maintenance of the roads is primarily a municipal affair, varied by a few county and State roads and almost no national roads. In the Philippines these duties have lain with the presidentes of the towns, but it is only fair to say that the municipal and provincial receipts applicable to the maintenance of public ways have not been sufficient to maintain good roads, and in fact are very much under the amount

necessary to rebuild roads in bad condition, much less to construct new ones.

The law providing for the use of wide-tired carts has gone into effect and in many provinces has worked admirably so far as it goes. While the use of the wide-tired wheel can not build a road it certainly prevents that class of destruction which the narrow-tired wheel has caused, and in a number of provinces there are now no narrow-tired wheels to be found. The law provided that wherever the provincial board should declare a road an improved road that then narrow-tired wheels should be prohibited from use on that road. It, moreover, provided a tax of 3 pesos Philippine currency for all wheels of that character used, and a tax of 2 pesos Philippine currency on all wheels that were fastened to the axle instead of turning upon it.

Fear that the operation of this law would deprive the already impoverished people of their only hope of getting their products to market has deterred the provincial boards from declaring roads to be improved roads in some instances, and this seems to have been done with some judgment. When a man has not sufficient money to supply himself with a new cart, it seems wrong to prevent his using the only means of transportation at his disposal to get his goods to market. To obviate this the construction of wide-tired wheels has been progressing in Bilibid Prison, and the cost has been reduced to 35 pesos a pair for wheels with steel axles and 3½-inch tires, which should put the wheels within the reach of most of the owners of carabao.

This reform, while it works slowly, is working surely and is one great step toward the maintenance of the highways, but it does not provide for their construction nor does it provide the real machinery for proper maintenance. It is as important to maintain a given piece of highway constructed with the expenditure of the people's labor and the people's money as it is to maintain a building or a steamboat or any other piece of valuable or expensive machinery. There is now no organization sufficient to accomplish this result. This can only be done by means of a road law, such as is common in many of the States of the United States, compelling every able-bodied man to work a given number of days per year on the roads or pay a fair equivalent in cash in commutation thereof.

Such a law has been prepared for the Philippine Islands, and from its passage it is hoped a system will be established which will provide an adequate maintenance gang for every road in each province. All improved roads should be divided in sections and so maintained as to be gradually improved, preventive measures being taken against deterioration. Until such a system is established it is believed to be an unwise expenditure of money to build a new road.

On the 4th of October, 1905, the Commission passed a law abolishing the office of supervisor. It was found that the system of having the supervisor a member of the provincial board and having one for each province was open to two objections:

First. The greater portion of the time of the expert was expended on legislative work, care of property, and making out the reports and other details which the many duties of his office entailed.

Second. The payment of the salary consumed an undue proportion of the money available for public improvements; in other words, the provinces did not have sufficient money for such work to warrant the

expenses of a skilled engineer, and the duties of the position did not enable a skilled engineer, were there work enough for him, to give the service to the province for which the salary was paid.

With the abolition of the supervisor, the district superintendent of schools became in most cases the third member of the provincial board.

The archipelago is to be divided up into districts by the consulting engineer to the Commission, to each of which a district engineer is to be assigned, who will have the direction of the expenditure of all the larger provincial improvements, and who will act in an advisory capacity only to the municipalities. He will charge such provinces and municipalities only the time actually expended in their services, and his sole duties will be those connected with his engineering work. It will be the duty of this engineer to prepare a plan for all the roads, bridges, etc., for all the municipalities in his district, and it will be his duty to inaugurate a system which it is hoped will result in a proper organization for the construction and maintenance of the highways with the labor and money to become available with the operation of the proposed road law.

The bureau of engineering, as is shown in the report of the consulting engineer to the Commission, hereto attached, has started on few new enterprises during the year. Two new roads only have been authorized—one to make a wagon road part way and a trail part way across the island of Samar, more as a military necessity than for the commercial service it is expected to perform; the other to utilize the labor of prisoners and simultaneously open up an important bit of hemp territory in the province of Albay, which it was believed would add considerably to the output of hemp in that province, as it opened up hitherto unavailable fields.

In view of the drought in Cebú the construction of the Cebú-Toledo road across that island, appropriation for which had been previously made; was started with the idea of giving work to those suffering from hunger.

Surveys for other and important roads have been completed and are on file, awaiting the time when the Commission should feel sufficiently in funds for the initiation of further road construction.

Five important roads, namely, the Vigan-Bangued, the Bacon-Sorsogón-Bulacan, the Pasacao-Nueva Cáceres, the Lucena-Sariaya, and the Bay-Tiaong, were completed during the year, and eight roads are still in process of construction, not yet having exhausted the appropriation available.

In no line of endeavor is the lack of funds more greatly regretted than in that of control of rivers during flood season, as the heavy rainfall causes the rivers to become torrents in a very few hours, and it is not infrequent that they do a great deal of damage which could be averted by protective construction. Unfortunately the condition of the government treasury has not been such as to enable the government to undertake any of these hydraulic developments, as they are essentially of very expensive construction, which, while desirable, is out of proportion to the value of the lands and property to be conserved.

For further information in regard to the operation of this bureau, attention is called to the report of the consulting engineer to the Commission.

RAILROADS.

During the fiscal year 1905 plans were prepared and on the 15th day of June, 1905, advertisements were issued in Manila and in Washington, D. C., for the construction of 1,113 miles of railroad upon terms set forth in the accompanying circular. The routes selected are wholly tentative, as the exact locations of the lines must be determined by the survey of the railroad officials. It is desirable to have at least one end of the railroads reach deep water at some point where there is a protected harbor. Plans to determine the possibilities of the various harbors are now being drawn by the bureau of port works. The routes call for 713 miles, or 64 per cent of the whole, in the island of Luzón and 400 miles, or 36 per cent of the whole, in the Visayan Islands. The island of Mindanao was not included because of its comparatively small population per square mile and also because it has not yet developed the use of its ample river transportation facilities. It therefore seemed that the need of railroad transportation in that island is not yet sufficiently great to warrant using the limited power of guaranty granted by Congress to the exclusion of other more populous regions.

The routes designated pass in the main through the most densely populated and most richly cultivated regions of the archipelago.

It is particularly desirable that Manila should be connected with the extreme northern and the extreme southern ends of Luzón. Unfortunately, however, to have guaranteed the interest on such construction would have consumed in the island of Luzón the whole of the guaranty authorized by Congress, which would have cut out the Visayan Islands from participation in the privilege of railroad construction. The government did not feel itself to be justified in doing this, and accordingly the line between Lucena and Albay, which traversed the mountain regions of Ambos Camarines, was omitted from the routes for which bids were to be made. The bids are to be opened on December 15, 1905.

BUREAU OF POSTS.

The necessity for economy prevented a contemplated increase in the number of post-offices. Of the 450 post-offices authorized in the appropriating bill, but 414 were in operation at the close of the fiscal year.

The bureau of posts has been carefully and conservatively managed and performs excellent service. The proportion of Filipino employees has been gradually increased, moving from 65½ per cent at the beginning of the fiscal year to 74 per cent at the end. The director of posts reports satisfactory service.

The money-order business continues to increase, being used very largely for remittances to the United States. This increase was more marked in the provinces than in the city of Manila.

The parcel-post exchange has been extended to include Norway, Belgium, Great Britain and Ireland, and the Commonwealth of Australia, including New Zealand.

As the postal service has been free to insular and provincial officials, the custom has gradually grown up among them of sending every-

thing, from a package of blank forms to commodities which would ordinarily go by freight as registered mail. It is estimated that of the total weight of mail carried during the last fiscal year 61 per cent was official. This seemingly unnecessarily extensive use of the mails by the different branches of the service has caused the insular government to abolish the franking privilege entirely, thus making each bureau pay for all of its postage.

The principal means of communication from city to city or to the greater centers of population, even on the same island, are generally by water, owing to insufficiency of land transportation facilities. The steamer service has been unsatisfactory, and will continue to be so until the contracts for which advertisements are now being issued for interisland transportation service have been awarded and the service put into operation, when it is hoped this difficulty will be obviated.

The total revenues for the fiscal year 1905 were ₱273,341, as compared with ₱267,669 the previous year—a very small percentage of increase. The largest receipts since American occupation were in the fiscal year 1903—₱291,354. This falling off can be readily explained by the reduction of American troops in the islands, about 80 per cent having been withdrawn. The expenditures have increased on an average of ₱69,442 a year, which is due to the gradual increase in the number of post-offices and the extension of the service to reach all parts of the archipelago, regardless of whether or not it will pay. It is believed this policy should be continued, and it is recommended that the number of post-offices be increased from the present authorized number of 450 to 650, and the recommendation of the director of posts that he be allowed to establish postal service in all the municipalities in the archipelago be granted.

There has been a tendency among officers of the government vessels to forget the absolute necessity for the mail to be carried, and many instances have occurred in which government vessels have gone off leaving the mails. Drastic measures have been taken to prevent the recurrence of this error, and it is now understood throughout the service that under no circumstances can the carriage of the mails be neglected. It is hoped that the establishment of the contract routes will give frequency and regularity to the service.

The Manila post-office during the fiscal year 1905 made 8,657 dispatches of mail, aggregating 43,621 sacks, and received 6,658 dispatches, aggregating 39,161 sacks, against 7,554 dispatches of 40,482 sacks and 6,749 receipts of 37,135 sacks for the year 1904. Eighty-six mails from the United States were received and 84 dispatched, against 59 receipts and 76 dispatches for the previous year. Two hundred and nineteen thousand seven hundred and sixty-seven pieces of mail matter were registered, as opposed to 187,494 in the year 1904, an increase of 17 per cent. The proportion of free postage on registered mail was 28 per cent of the total. With the abolition of the franking privilege there should be a considerable falling off in the number of articles sent.

The United States Post-Office Department has been criticised for not using all commercial steamers leaving the Pacific coast bound for the Orient for the dispatch of mails for the Philippine Islands. It is believed that by arrangements which the postal authorities in Washington, D. C., have made this cause of complaint has been

remedied, and hereafter full use will be made of all commercial vessels.

For further details attention is called to the report of the director of posts, hereto attached.

BUREAU OF COAST GUARD AND TRANSPORTATION.

During the fiscal year 1905 the bureau of coast guard and transportation has continued to do the transportation service for military and civil officials without charging the other bureaus for their service. In view of the unfortunate condition in which the merchant marine had found themselves, owing to business depression and other economic causes, the attention of the governor-general was turned toward bettering their conditions, and a committee was appointed to study the whole question and make recommendations to the Commission. As a result of the operation of this committee, Act No. 1310 was passed on the 23d day of March, 1905, which in substance provided for advertisement for bids to transfer the government service to commercial lines, requiring them to fix the ships up according to modern standards and so maintain them. These bids are to be opened on the 1st of March, 1906, when the awards will be made. The law further provided that such coast-guard vessels as remained on duty should charge for services performed. It further provided for the addition to the bureau of coast guard and transportation of a new officer to be known as the "superintendent of interisland transportation," whose business it should be to see that the various contracting vessels lived up to their contracts, maintained their vessels according to the required specifications, and gave good service both to the government and to the public. One of the most important features of this act was the provision that each contracting company should offer the same terms to the public upon which they contracted for government service, and should give the government the lowest rate offered to the public, thus insuring a uniform and, it is hoped, a reasonable rate for all. What the effect of this act will be can not be accurately foretold. Twenty-one routes have been advertised for, and if bids are received upon all of them and satisfactory service inaugurated, it is hoped that many coast-guard vessels now employed can be laid off. Wherever the service is not contracted for, it is the intention of the government to utilize coast-guard vessels and allow them to carry passengers and freight upon rates prepared as nearly on the same basis as the commercial rates as can be conveniently arranged—that is, on rates computed on the basis of the average contract price of all the commercial lines. The plan is to see that every port in the archipelago gets good and regular service at reasonable rates; and as fast as the business in any port increases to such an extent that the commercial lines will agree to contract for it, the government vessels will be taken off and the field left clear for the merchant marine.

At the beginning of the fiscal year there were 17 coast-guard cutters of the size of the *Polillo* in the service. On the 15th day of December, 1904, the cutter *Masbate* was wrecked on an uncharted reef on the east coast of Sámar, when going by night to convey some constabulary to a point near San Ramón. No lives were lost and much of the machinery was saved. An effort was made to float the vessel;

a new bottom of cement was being put in, she was placed on rollers, and a canal blasted out of the coral to float her. The destructive typhoon of September 26, 1905, however, came before arrangements were completed for floating her and damaged the wreck to such an extent that the effort to save here was abandoned.

In the same storm the cutter *Leyte* was caught in the center of the typhoon in the dangerous San Bernardino Straits, got out of control of her captain, and was wrecked, with the loss of all the officers and passengers and all but nine of her crew, who found themselves cast upon the shore, but much injured by the fury of the storm. The vessel was a total loss, although some parts of the machinery have been recovered.

Two of the larger vessels are detailed for light-house service, and the increasing number of lights will require the constant need of one more. Two will be detailed in the course of the ensuing fiscal year to coast and geodetic survey work. One should be stationed at Zamboanga, one at Iloilo, and one somewhere near southern Luzón for strategic purposes, and will ply on what are known as secondary routes, part of their time being available for constabulary service. One vessel has been assigned to customs duty in the islands near Borneo and has continued the good work reported last year in the suppression of smuggling. It is hoped that three or four can be tied up and their expenses saved.

It is somewhat unfortunate that we have not a few smaller and less expensive boats for the less important work, and it is hoped that three steamers can be obtained capable of making headway about the archipelago in all weathers and which can be operated at something like a third of the cost of the standard cutter.

During the year, in order to carry out the purposes of the act authorizing the construction of coast-guard vessels, this department has consistently refused transportation on coast-guard vessels to individuals who were private parties wishing to go where commercial boats ply, except where cases of special emergency were noted.

During the year the improvements in Engineer Island have been very marked, Bilibid prisoners having been worked very successfully in filling in and cleaning up the yards and helping where possible in the construction. The shops are in successful operation, and it is estimated that in repairing vessels the saving is very considerable both in money and time.

The marine railway is in successful operation and in constant use.

The government suffered a severe loss in the death of Capt. Alexander Franklin, the light-house inspector. Although suffering from acute malaria, he stayed too long at his post of duty when he should have been caring for his health, and in him the government has lost a servant that it can not replace.

During the year the number of light-houses was increased from 76 to 89 lights. At the end of the year Capt. Spencer Cosby, Corps of Engineers, U. S. Army, who had been detailed for this duty, was relieved and ordered home. Captain Cosby was an admirable officer—careful, thorough, skilled, and one whom the civil government was extremely sorry to lose.

For further details attention is called to the report of the chief of the bureau of coast guard and transportation, hereto attached.

BILIBID PRISON.

The total number of prisoners confined in Bilibid and penal settlements at the beginning and end of the fiscal year 1905 was 4,318 and 4,721, respectively, an increase of $9\frac{1}{2}$ per cent.

The total cost of maintenance of prisoners was ₱581,456.17, as compared with ₱458,165.30 during the previous year, an increase of ₱123,290.87. The cost per capita was 32 $\frac{1}{2}$ centavos per day as compared with 33 $\frac{1}{2}$ centavos per day the previous year. This takes no account of receipts from sales of manufactured articles.

The prison has continued in the manufacturing of carriages, laundry business, tailor shop, furniture making, and other specialties. The receipts from the sale of manufactured articles was ₱51,601.39, as opposed to ₱38,889.34 the previous year, an increase of ₱12,712.05.

The conditions mentioned in the last annual report, which resulted in crowding the prison, were actively dealt with during October, November, and December, 1904, with the result that prisoners were shipped to Albay, Mindanao, Fort McKinley, Malahi Island, and a penal colony started near Puerto Princesa, in the island of Palawan. The prisoners sent out to these various camps aggregated 1,590 in number, which effected a very material relief to Bilibid, and provided profitable and satisfactory employment for all the prisoners ordered to Bilibid.

On the 30th of June the location and number of prisoners was as follows:

In Bilibid Prison proper:

Women.....	70
Detention prisoners.....	676
Old and decrept.....	418
In hospital.....	59
All others.....	1,908
Total.....	3,131
At Malahi Island.....	125
At Albay.....	318
At Overton, Mindanao.....	453
At Iuhult, Palawan.....	239
At McKinley.....	373
At Luneta.....	20
At San Lázaro.....	55
At Hospicio San José.....	7
Grand total.....	4,721

ALBAY ROAD BUILDING.

This experiment was inaugurated by the passage of Act No. 1260, appropriating the sum of ₱65,000 to be loaned to the province of Albay for the construction of a much-needed road that would open up a very rich hemp country. The insular government provided the labor and rations of prisoners to the amount of their cost in Bilibid and the tools and equipment liberated by the completion of other roads. The military authorities detailed a battalion of scouts to serve as guard and furnished the necessary transportation for supplies and materials. The provincial government paid the balance of the expense, namely, superintendence, cost of maintenance of pris-

oners in excess of Bilibid cost, and purchase of material. This arrangement worked admirably. At first there was considerable sickness and some mortality among the prisoners, many being returned to Bilibid as unfit for duty. A special medical inspection was made of the camps, which were pronounced to be admirable and entirely sanitary. A change was ordered in the hours of labor and the rations supplied the prisoners, which has resulted in much improved health conditions.

On March 24, 1905, a number of prisoners made a rush to escape. Of 42 concerned in this rush 2 were killed, 2 wounded, and the others hunted down and the entire number returned to the prison. In this work the natives of the province showed great zeal and friendliness to the authorities, and it was with their hearty cooperation that the captures were effected. This is the last bit of insubordination reported. It is to be said that the prisoners have worked better than was expected, the road has progressed more rapidly than was estimated, and the prisoners have proved themselves to be good workmen.

Mention should be made of Lieut. J. B. Allison, Seventh Infantry, who took command of the scouts at the start and established the system which worked so admirably.

CAMP OVERTON.

By arrangement with General Wood, 500 prisoners were sent to Mindanao to build the road from Overton to Marahui or Camp Keithly. The understanding was that the Moro Province should undertake the expense of feeding, guarding, and caring for the prisoners, the insular government merely providing them. On February 24, 1905, the first installment was sent down, and others were sent down from time to time, until on March 13 last the full number of 500 prisoners were there. During the month of June, 1905, beri-beri broke out among the prisoners, and it was found necessary to change the rations and the sick were returned to Bilibid, where they were speedily cured. The mortality, however, had been very high, there being over 34 deaths before this scourge was got under control.

On April 1 five prisoners escaped, but were all recaptured. On the 1st day of September, 1905, 48 men broke away; 4 were killed in the pursuit, 25 of them made their escape, and 10 were soon afterwards captured, leaving 15 yet unaccounted for.

MALAH I ISLAND.

Two hundred and six prisoners were sent up to Malahi Island, where the military were maintaining a military prison. Of these prisoners, 50 were military prisoners who were being supported in Bilibid at military expense, and 156 were civil prisoners, sent up with the double purpose of assisting in breaking rock for construction of the road at Fort McKinley, for which purpose the military authorities were shorthanded, and of relieving the then existing condition of congestion in Bilibid.

On the 25th day of November, 1904, 36 of these prisoners, while returning from a neighboring small island in a launch, overpowered

their guard and endeavored to escape. The fault for this accident seems to have lain in the carelessness of the guard, who neglected to carry out its instructions, and allowed the prisoners to mingle with them while carrying tools, with which they had been working on the neighboring island. The troops on the shore, not more than 200 yards off, saw what had happened and opened fire. The launch was recovered, and was much drenched with blood and gave evidence that a considerable number of the prisoners had been hit by the bullets which were fired upon them from the shore. Many of these prisoners were captured or killed, the people of the province into which they had escaped showing very active interest in effecting their rearrest, and many were brought in, alive or dead. A few succeeded in joining some predatory bands of ladrones that were then operating in the provinces of La Laguna, Cavite, and Batangas, but it is gratifying to say that all but 4 of the 36 have been accounted for and have either been killed or captured.

IUHUIT SETTLEMENT.

In the month of November, 1904, 60 prisoners were sent down to inaugurate a penal colony on the Iuhuit River, in Palawan, directly opposite Puerto Princesa. The site chosen is a valley about 10 miles long and 5 miles wide, of land which is declared by the experts to be extremely fertile and capable of producing an abundance of many kinds of crops. Surveyors were sent down, who have prepared the limits of a reservation to be used for penal purposes. The prisoners then started have been added to until they now number 287 in all, and it is proposed to continue sending 25 a month down there. These prisoners are carefully selected from those who have behaved themselves well in Bilibid, and are placed on parole, no guard being set over them. Their behavior up to September 20 was good, and only one serious act of insubordination was reported, namely, on June 12, when 9 prisoners made their escape to the woods. Eight of these were captured in endeavoring to escape to another island, leaving 1 still out, but who is supposed to be dead. On September 20, however, an organized outbreak took place, which at one time threatened to be serious. Thirty-three prisoners rushed in and captured what few arms were held by the American officers and threatened to kill the superintendent and some of the more loyal prisoners, meaning to make their way to Puerto Princesa, surprise the company of scouts there stationed, and then make their escape, possibly by capturing some visiting steamer. Notice of the trouble was given by loyal prisoners to the scouts, who immediately attacked, killed 3 and captured 11 prisoners, and are engaged in a campaign for the apprehension of the remaining 19. The attitude of the remaining prisoners has been most satisfactory, and measures will be taken which it is hoped will result in preventing any further occurrence of this kind.

The plan is to give these prisoners an opportunity to cultivate little lots of land for themselves, and they can send for their families and eventually obtain pardon by good conduct and industry.

As frequently happens when first breaking the soil of rich tropical countries, a great deal of malaria developed among the prisoners, and a large proportion of them at one time or another were attacked, in-

cluding the guards and doctor. A medical officer was selected and put in charge and a particular investigation as to the causes of the disease inaugurated by the commissioner of public health, who made a personal trip to the ground. As a result of these recommendations and measures the disease has been very largely brought under control, and the last report showed that there were 6 out of 287 in the hospital. This is a small proportion, particularly as many old and decrepid were among those who were sent to the colony.

It is hoped that this feature of Bilibid will be self-supporting when the crops now planted have had the opportunity to mature.

In December, 1904, the prevalence of tuberculosis in the prison and the mortality among the patients merited the most earnest attention of the authorities, and as a result of the recommendation of the commissioner of public health a separate hospital was hired and all tuberculosis patients moved there with very beneficial results. The number of patients in the prison decreased very largely and many of the patients recovered. This hospital has been continued and is now in operation, and on June 30 contained 61 patients. Comparatively few of these cases are contracted in Bilibid, most of them coming from the provinces where prisoners who have been confined in the provincial jails are too often afflicted with this disease. In the interests of humanity, as well as justice, it is recommended that rigid supervision of the provincial jails be undertaken by the insular authorities and the health conditions of the provincial prisons maintained to better standards.

In Bilibid prison the discipline has been uniformly good and conditions on the whole satisfactory. On the 7th day of December, 1904, a small outbreak occurred among the detention prisoners, in which 200 endeavored to gain their liberty. The prompt use of a Gatling gun in the tower and the riot guns with which the guards on the walls were armed ended the trouble in 8 minutes. There were 19 killed and 40 wounded, but the work in the shops and other industrial departments of the prison was not interrupted, and in 30 minutes' time there was no evidence, except in the hospital, that there had been any trouble.

For a time prisoners were worked at Fort McKinley. A force numbering 450 was sent up and housed and guarded by the military authorities to work in fixing up the grounds. This plan was soon abandoned owing to lack of proper quarters, and the prisoners returned to Bilibid. Forces numbering from 200 to 500 have been kept daily at work in the improvement of Manila and Engineer Island, tearing down the old wall along the river front and such other improvements as have been designated by the municipal board.

For further details attention is called to the report of the warden of Bilibid Prison, hereto attached.

OFFICE OF PORT WORKS.

In May, 1905, the Commission passed Act No. 1339, which changed the name of the office of the improvement of the port of Manila to the office of port works, and transferred to this office the responsibility of the construction of the improvements of the ports of Cebú and Iloilo and gave the officer in charge general supervision over all harbor and river improvements in the archipelago. This change was made with

a view to utilizing the expert knowledge possessed by the officer in charge of the improvement of the port of Manila for the works in connection with the other harbors and in order to have one man responsible for collecting the information necessary to enable the government to act intelligently in its appropriation for improvement of harbors and its requirements for the railroad termini. During the year ₱3,446,000 was appropriated for the port of Manila and expended upon the improvements. The harbor was dredged; 74½ per cent of the area to be dredged to 30 feet was completed, and the breakwater was finished for its entire length with the exception of the light-house and a few feet at the extreme western end. The detached breakwater was completed for 1,600 feet, and the balance, 1,400 feet, is completed to mean low-water mark, thus giving practically the whole protection contemplated by the plans. Throughout the year many ships lay inside the breakwater; but during the month of October, 1904, the way was cleared and all shipping, including the largest vessels that stop at the port of Manila, now anchor in the improved harbor. This makes a great difference to commerce, and it can be said that Manila now for the first time has a really good harbor. It was found that through the wave action and currents the dredged part of the harbor was gradually being filled up by the material brought along the shore from the south. On the 24th day of July, 1905, an additional contract was entered into with the Atlantic, Gulf and Pacific Company for the construction of an additional breakwater, which can eventually be used as a wharf, extending 1,000 feet into the harbor from the extreme southern corner of the filled-in land. This breakwater will mark the boundary between the dredged part of the harbor and the undredged region to the south of it, and will prevent the movement of silt into the dredged area. The same contract further provides for 2,000,000 cubic yards of additional dredging, 20 per cent of which will be used to increase the height of the existing fill and 80 per cent will be used to fill in the proposed new area suggested by Mr. Burnham in his plan for the improvement of Manila, which will provide a fine new hotel site and a new park for the city.

On May 2, 1905, the Commission passed a resolution providing for the construction of two wharves, one to be 650 feet long by 110 feet wide, the other to be 600 feet long by 70 feet wide, the construction to be of steel and cement; the whole construction to be of the most durable nature. When the plan is finally completed, there will be nine wharves, of which four are now authorized either in whole or in part. In addition to the two above-mentioned, the military authorities have been allotted a site amounting to about 10 acres for their purposes, and have contracted for the construction of a wharf 500 feet long by 60 feet wide. This, however, will be built of wood, and therefore can not compare favorably for durability with the steel and cement structures of the civil government.

By Act No. 1342 and resolution of September 18, 1905, the Commission appropriated the sum of ₱1,221,520 for the completion of the port of Cebú, and by Act No. 1342 ₱483,000 for the improvement of the port of Iloilo. The contracts have been made with Messrs. J. G. White & Co. for these works, and work has already begun at both places. That in Iloilo is about 25 per cent completed.

In May, 1905, a cable was received from Washington announcing the relief of Maj. Curtis McD. Townsend, the engineer in charge of

port works. This was received with great regret by the civil government, and the authorities in Washington were requested to leave him at least until his successor could arrive and certain work with which he was more familiar be completed. Major Townsend left finally for the States on August 15. He was a man of great skill, great tact, and superlative abilities. To him must always be due the success of the construction of the port of Manila. In his quiet but persistent way he met and mastered all the obstacles which at times seemed almost insurmountable, and the Philippine Islands are permanently bettered as a result of his labors.

On August 15, 1905, Lieut. Col. W. L. Fisk, of the United States Army, took charge of the work of the bureau.

On September 14, 1905, the Commission passed a resolution authorizing the employment of two survey parties to make a thorough investigation of all the ports and harbors of the archipelago. Such work is imperatively needed, as, although we know what water there is in many of the harbors, there are many about which the information is inadequate, and there are very few even where the charts are completed that have been surveyed with a view to determining the feasibility and cost of permanent improvements in the way of dredging or protection from exposed directions. It is hoped to make detailed analysis of these harbors, with estimates for their development and borings to determine the nature of the bottom.

Another feature which deserves the most earnest attention of the Commission is the development of the navigable rivers in the archipelago. It is estimated that in the island of Samar alone there are 150 miles of rivers navigable to vessels of 6 feet draft at high water, and many for vessels of much greater draft. Almost all of these rivers have bars across the mouth which prevent vessels from entering that could very well navigate some distance were they once inside. It is the intention to have these same survey parties investigate the navigable rivers, with a view to ascertaining where funds for the improvement of waterways can be most advantageously expended. It is believed that this source of communication could be developed coincidentally with the railroads, and thus give an added impulse to the industry and agricultural development of the archipelago.

For further details attention is called to the report of the office of port works hereto attached.

COAST AND GEODETIC SURVEY.

The work of the Coast and Geodetic Survey has been pushed steadily throughout the year, at first by the steamers *Research* and *Pathfinder*, and in February, 1905, the Philippine government's fine new steamer *Fathomer* took up actively the work of surveying. At the beginning of the fiscal year, of the 11,444 miles of seacoast there had been completed by the Coast and Geodetic Survey 875 miles. During the fiscal year 1905 an additional 315 miles were completed, making in all 1,190 miles. With the present force the charting of the islands, so necessary to navigation, excluding the surveys and charts made by Spanish, British, and other sources, which are considered sufficient to meet present needs, will not be completed for eighteen years. Realizing the absolute necessity for an earlier completion of this work, negotiations were entered into with the Depart-

ment of Commerce and Labor in the United States, and also with the Navy Department, to see whether arrangements could not be made for more rapid prosecution of this work.

In April, 1905, the Commission passed a resolution authorizing the secretary of commerce and police to turn over two coast-guard vessels for this work to the Coast and Geodetic Survey, on the understanding that the expense would be divided in such a way as to approximate one-third for the insular government and two-thirds for the United States Coast and Geodetic Survey. This change will enable us to prosecute the work so that it will be completed in twelve years.

Admiral Train, commanding the Asiatic Squadron, expressed the belief that he could advantageously place several of his present force of ships on the work of coast survey and detail enough men to very materially lessen the time necessary to bring this work to completion. In fact, if his recommendation were to be adopted, it is believed that with the additional force of ships the insular government has detailed to this work, the charting could be practically completed in six or eight years. On July 3, 1905, cables were sent to Washington requesting that the Navy Department grant Admiral Train the necessary authority to do this work, but they have replied that they do not believe they can spare the necessary men and ships. It is hoped that they will reconsider this action, as the advantages to navigation of proper surveys are manifest.

For further details attention is called to the report of the Coast and Geodetic Survey hereto attached.

BENGUET ROAD.

On January 28, 1905, Maj. L. W. V. Kennon, the officer in charge of the Benguet road, drove through to Baguio in the first wagon to pass over the road. It was closed for a few weeks to perfect the construction, and then opened for service on the 27th day of March, 1905.

On the 30th day of June, 1905, an unprecedented downpour of rain, amounting to 17 inches of rainfall in twenty-four hours, washed away several sections of roadbed, taking out some of the smaller bridges over ravines and one of the larger bridges across the Bued River. This latter bridge was struck by a tree which was being whirled down by the torrent. The effort to clear away the bulk of the dangerous material above the roadbed had brought down rubble in sufficient quantities to choke the ordinary course of the river, so that in some places the water during the dry season was running wholly out of sight under the broken rock. The stream swept practically all of this loose rock down to the more level regions below and laid bare the foundation for the permanent lay of the road. It is a matter of congratulation that almost the whole of the lower part of the road up to Camp Four withstood this torrent with no appreciable damage, such minor repairs as were necessary being completed in a few days and the roadbed showing no signs of deterioration. From Camp Four up the road was undergoing its first rainy season, and a considerable number of slides were loosened and came down from above, and, as explained before, certain parts of the surface were washed away. The foundations, however, of the roadbed

remained intact throughout its whole length, which gives satisfactory reason to believe that it is a feasible route for the purpose for which it was intended and that once it had passed through its first rainy season that it will stand future deluges as well as the road below has done.

The total cost of this road has been ₱3,923,694.10, or a total of ₱147,896.50 per mile. This does not compare unfavorably with the cost of a railroad construction in other difficult mountain sections. The road as now completed begins a few miles from Pozzorubio in the lowlands. It follows a route which opens a very rich and fertile country well settled and which is being rapidly built up under the impetus of good transportation facilities; but it is not the line which will be traversed by the railroad when it builds in. At Camp One, where the gorge of the Bued River first becomes pronounced, the road first begins to occupy the location which the railroad will assume; but to within 1 mile of Twin Peaks it was built under the supervision of the earlier engineers, and the sharp curvature and adverse grades will make it necessary to reconstruct the roadbed to get proper railroad facilities. From 1 mile below Twin Peaks to Camp Four, a distance of $7\frac{1}{2}$ miles, the road is of admirable construction, excellent alignment, supplied with rock and cement culverts, properly graded, surfaced, ditched, and almost ready for the railroad tracks to be laid, with the exception of the bridges across the Bued River, which are cheap suspension bridges designed for temporary service and will have to be replaced by steel structures before the road can be made passable by trains. From Camp Four into Baguio the roadbed is well laid, sufficiently aligned with even and not excessive grades and curves, and capable of satisfactory service by electric cars. The culverts are principally cement, although a number of temporary wooden structures for the purpose of crossing ravines and branches of the river have been left and will have to be replaced by steel or cement by the railroads.

This part of the road has just passed through its first rainy season and has yet to be surfaced with durable material, which can be done by a small maintenance gang at no very great expense. All the permanent larger bridges will have to be constructed. The maximum grade of the road is not quite 10 per cent, which can be overcome by specially constructed steam engines, but will probably require electric traction. On this grade heavy freight trains are out of the question, and the freight will have to be carried in small quantities by the electric traction.

Examination has shown that there are several admirable water-power sites on the Agno River. At this writing it is not known whether the expense of development will be prohibitory, but it is believed they can be developed at a reasonable figure.

Practically nothing has been done toward the development of Baguio pending the construction of the railroad to within a reasonable distance, as the cost of transporting goods by bull cart over the uncertain road from Dagupan to where the Benguet road begins would make the construction of proper building too expensive.

In December, 1904, Mr. D. H. Burnham, who very liberally contributed his services to make a plan for the development of the city of Manila, visited Baguio with his assistant, Mr. Anderson, and made a

very extensive study of the reservation and has submitted a plan for its development. His report is attached hereto, and gives a fine idea of the possibilities of making this one of the most beautiful cities for a summer resort anywhere to be found.

For further details attention is called to the report of the officer in charge of Benguet improvements, hereto attached.

Respectfully submitted.

W. CAMERON FORBES,
Secretary of Commerce and Police.

The PHILIPPINE COMMISSION,
Philippine Islands.

APPENDIX A.

ANNUAL REPORT OF THE CHIEF OF THE PHILIPPINES CONSTABULARY.

HEADQUARTERS PHILIPPINES CONSTABULARY,
Manila, P. I., June 30, 1905.

SIR: I have the honor to submit herewith my annual report for the fiscal year ending June 30, 1905, and to set forth existing conditions as to public order.

Since last report the limits of constabulary districts have been changed only by the transfer of the province of Palawan, for administration, from the jurisdiction of the third district to constabulary headquarters, and the creation of a provisional district consisting of Rizal, Laguna, Cavite, and Batangas under Colonel Baker.

At the date of this report the enlisted strength of the constabulary, including the telegraph and medical divisions, amounts to 6,967, occupying 168 posts, and the strength of the scouts serving with the civil government consists of 27 companies, with an average of 100 men each, holding 57 posts.

At the beginning of the fiscal year conditions had greatly improved over the preceding one, and, in spite of the dissatisfaction with the modest land tax imposed by enactment of February 13, 1901, they were as satisfactory as could have been expected by those familiar with the character of the people and the conditions of the country. The following extract from last year's report gives a fair idea of conditions as they existed June 30, 1904:

"The work during the year has been largely a repetition of that of the preceding year, with the difference that the marauding bands have been smaller in number and disturbances less frequent. A gradual but sure conviction that their best interests lie with the government rather than with self-appointed leaders has dawned upon all Filipinos above the average intelligence. To bring conviction to numerous remote tribes, some of whom have scarcely seen a white man and who are at enmity with all their neighbors, and to people who are fanatical and ignorant of the outside world almost beyond belief, will require much time and instruction by practical methods.

"Under the operations of the courts professional agitators have been largely squelched, and the efforts of their minions have not met with success even among the ignorant. Practically every province has its mountain population, which has been driven into the fastnesses of the mountains and oppressed by the lowlanders from earliest times. These people have come to regard all outsiders as enemies, and from time to time they organize bands under some fanatic influence and begin their marauding expeditions. The pulajanes (red-trousered men) are such."

It was about this time that the strength of the constabulary was ordered cut down from 7,200 to 6,000. The expiration of terms of enlistment of most of the scouts was near at hand (September), and three district chiefs were absent on leave. In a supplemental report dated September 22, I stated the following, which indicates further improvement everywhere, except in the Visayan district:

"In the first district ladrone bands are being continually decimated. At present much smaller detachments may be safely used in their extermination. Depredations since last report are practically nil; on the other hand, various fragments of bands have been struck and many captured ones have been duly sentenced.

"The second district is, generally speaking, very quiet. The killing of Roldán and the complete extermination of his band, as set forth in the following telegram from Lieutenant Cheatham, of the scouts, has freed the Camarines-Tayabas border country of a great scourge. * * *

"In the third district the pulajanes of Cebú, Sámar, and Leyte have broken out and are giving considerable trouble. Pulajanism seems to be a resentment of the mountain people against the lowland people—of the cultivators of the soil against the townspeople who purchase their products, for real or fancied oppression, expressed in the only way with which they are acquainted. Their ignorance prohibits recourse to law. There are always agitators who profit by this discontent to urge these ignorant people on to barbarous deeds. Their fanaticism is exploited to its ultimate limits, with the result that when a town is attacked the most horrible atrocities are committed.

"The recrudescence of this agitation of the three-mentioned Visayan provinces at the same time would indicate some concerted action. The subject is being carefully investigated.

"In the fourth district conditions remain quiet. A few small fights between rancherías or towns of the wild tribes have been reported, especially between the Igorrotes of eastern Bontoc and northern Vizcaya.

"In the fifth district the work of drilling and instructing the newly organized Moros continues."

With the passage of the internal-revenue act on July 2, 1904, the proprietary representatives of the tobacco and distilling interests became greatly disgruntled. Agitators, and others who should have remained steadfastly with the government, fully aware of the order reducing the constabulary, of the approaching expiration of service of the scouts, of the absence of three skilled district chiefs, of the unpopularity of the fusion of towns, and of the discontent over the land tax, seized upon this enactment (internal revenue) to develop their ever-ready propaganda. They did not fail to select localities that promised greatest success, namely, Cavite-Batangas, and Sámar.

The undersigned arrived at Sámar on December 15 and took personal charge of operations, which he continued for more than six months. The provisional district was organized and put under charge of Colonel Baker, where he continues. The assistance of American troops was asked for in both localities, and most valuable aid was rendered by them.

With these exceptions, scouts and constabulary have been fully able to cope with all local disorders and maintain a higher standard of order than during any preceding year of American sovereignty. Nowhere in the entire fourth district and nowhere in the third, except in Sámar and Cebú, have scouts been required. The concentration of constabulary in Cavite-Batangas (33 officers and 785 men) and Sámar (31 officers and 716 men) caused a very severe strain upon the forces in other parts of the archipelago and greatly interfered with wholesome measures of instruction and improvements that were being carried out.

The valiant and loyal manner in which the constabulary has responded to the excessive labors imposed upon it leaves no doubt as to its efficiency and to the correctness of the estimate put upon it in the past by the insular government and its friends.

The division commander, Major-General Corbin, has fully cooperated with the insular authorities in the maintenance of public order, and has shown himself ready at all times to supplement the native contingent with Americans.

SÁMAR.

At the time of the surrender of the insurgents in Sámar to Brig. Gen. Frederick Grant in 1901, there remained out with their bands and arms certain ladrones, "Pope" Pablo, alias Pablo Bulan, Antonio Añugar, Pedro de la Cruz, all distinguished even during Spanish rule. They were outlaws and leaders of the Dios Dios fanatical sect now become Pulajanes. Their special habitat was the Gándara Valley. In the spring of 1904 they were strengthened by a very shrewd individual who called himself "Enrique Dagohob." This man, assuming the customs and methods of the pulajanes, was given considerable latitude by the veteran chiefs. In point of education he was superior to all. Crossing from the Gándara to the headwaters of the Oras and Dolores, he soon made himself master of that region by reason of his cruelties, his arms, and his power of organization. His success in getting upwards of 60 carbines from the Thirty-eighth company of scouts in the two engagements at Oras and Dolores, at the mouths of the rivers of the same names, gave him and the Pulajan cause great prestige. He and the other chiefs had so organized and terrorized central and northeast Sámar that the vigorous and successful campaign that is now being carried on will doubtless continue many months before complete pacification obtains there and all the guns now out be recovered. Attention is invited

to Colonel Taylor's report on this subject and to the following telegram and extract from a previous communication, which give an idea of the nature of the campaign, the details of which would consume too much space for this report:

[Telegram.]

CALBAYOG, SÁMAR, *March 2, 1905.*

Commissioner FORBES, *Manila:*

Just arrived here. Reached Maslog 21st. Scout detachment under De Court and Wilson had successfully attacked same 18th. De Court had 2 killed, 1 wounded. Rafted down Dolores River to Hinalasan, where established post under Wilson. Scouts and Dower's constabulary reached Oras 24th; so did launch *Cabra*. Made combined movement three columns back of Oras 24th. With Captain Weeks, Fifth Infantry, and his party, I ascended Oras River 26th to head of navigation, on launch *Cabra*. Selected Cagpill as site for post for De Court's scouts and Company B, Manila constabulary. Crockett's barracks, San Ramón, were attacked in force daylight 23d; he buried 38 Pulajanes, captured 1 Springfield, lost 1 killed, and 3 slightly wounded. With detachments of scouts under Nickerson and Overly and constabulary under Crockett, I severely punished camp Pulajanes south of Gumay River 28th, killing several leaders and capturing 3 Springfields. Crockett shot through muscle left forearm; now in hospital Laguan. Wound moderate. Long expedition by Captain Learnard, Fourteenth Infantry, and Lieutenant Speth, scouts, leaving Tagibiran 15th had most wholesome effect. Same is true of Colonel Foster's operations in Gándara Mountains. Many bodies of Pulajanes found at San José and Maslog showed punishment by Cook, Avery, and De Court. Lieutenant Williams, constabulary, leaving Catubig 27th, captured in mountains Palapag supplies and ₱1,500, probably stolen in Oras raids. News from other parts will be sent from Catbalogan.

ALLEN.

[Extract.]

By reason of the great distances involved, the absence of means of communications, and the headway that pulajanism has made in the Gándara and Catubig Valleys and in nearly the entire northwest of Sámar, this campaign has presented some real difficulties. The recent capture of guns at Oras, Dolores, and Maslog has not only materially increased the strength of Dagohob, but likewise the boldness of his forces.

Like disturbances in other parts of the archipelago, this one has not been entirely due to the initiative of the criminal classes in the mountains. There have been aiders and abettors in the towns, but on the whole this uprising largely represents a struggle by the mountain or common hemp-working class against the lowland or townspeople. The criminals from Spanish times, Pablo Bulan (Papa Pablo), Antonio Añugar, and Pedro de la Cruz were the original and principal agents. But they have been much strengthened by others (now of note) among whom Enrique Dagohob stands out first. This individual is reported to be the son of a friar and was born in Masbate. He was a prisoner in Masbate in 1902, under the name of Andres Villasis, probably his real name. In 1902-3 he was in Leyte under the name of Enrique Villareal, and last year he came to this province under the name of Enrique Dagohob. He has been the principal factor in burning, terrorizing, and organizing the northeast of Sámar. Nearly all the commissions captured are issued by him.

His plans contemplated the destruction of all towns, barrios, and sitios of the lower country and all the population that failed to join him in the mountains. Maslog on the east watershed and Buan (San José) on the west have been occupied by him and his followers as seats of government. These places were considered so inaccessible that he doubtless expected immunity from attack in them; in any event, he probably thought that with his numbers he could destroy detachments, if the trails had not already done it, by the time they reached him.

After being attacked by Lieutenant Avery with the Thirty-seventh company of scouts and Lieutenant Helfert with 50 constabulary January 8, he moved with his following across the divide to San José. In places this trail is fit only for aquatic animals, in other places only for prehensile ones. My column of picked officers and men required two and a half days to make this distance. At San José Dagohob was joined by Papa Pablo and Pedro de la Cruz. Seventy-eight temporary houses and cuartels were constructed there, capable of housing

about 800 men, women, and children. In this place he was struck by Lieutenants Cook and Overly of the scouts with 100 men of Eighteenth and Thirty-fifth companies, February 3. As a result of this and shortage of food he recrossed to Maslog. In this place he was again struck by Lieutenants De Court and Wilson with detachments from the Fifth and Thirty-seventh companies scouts on the 18th.

"The attacking forces in each of these three cases, though successful, were unable to push their victories through. The long marches required to reach these places, the ignorance of the nature of the defense, the denseness of the surrounding jungle, the comparatively small columns, and the responsibility caused by men early killed and wounded in action brought about the withdrawals."

The force of the Pulajan movement in Samar was, unfortunately, not fully gauged until it had assumed proportions too great to be handled by constabulary alone or even with the available scouts after the losses at Orás and Dolores. It was therefore necessary to call freely upon American troops to aid in its suppression. The division and department commanders responded to all requests made for assistance. While there was no friction it was clear after a few weeks' trial that the dual control in the same province, of American troops under the department commander and scouts and constabulary under the chief of constabulary, was not satisfactory to either one or to the best interests of the question to be solved. This, taken in connection with the cost that the long campaign was causing to the insular government and the necessity of returning certain constabulary detachments to their respective provinces, brought about the division of the province, for purposes of operations, into east and west Samar, the former being turned over to Brigadier-General Carter and the latter being held by the undersigned. With this change all the scout companies serving in Samar were turned back to the military authorities and all the constabulary of the province was concentrated in West Samar. The wisdom of this movement has been confirmed by subsequent results. Civil government has not been superseded in east Samar by General Carter's control of operations there, nor has the writ of habeas corpus been suspended anywhere.

While there can be no doubt about the successful operations now underway in Samar, assisted by Governor Curry, whose experience eminently fits him for the work involved, much time will be required to effect the desired results, and this would be true if the forces now operating in that island, with its vast roadless interior, were doubled. The posts established by the undersigned well up the Gándara, Catubig, Orás, and Dolores rivers should be permanently held in order that the ignorant people tributary thereto may be properly protected against the unscrupulous tradesmen and that they be held in restraint until they shall have emerged from semisavagery.

The campaigns in Samar and Cavite-Batangas, which continue, have demonstrated the importance of having small constabulary reserves, freeing us from dependence upon hastily organized provisional companies. (See previous report on this subject.)

SCOUTS.

While maintaining the constabulary at a minimum compatible with public safety in the various provinces, it is not wise to deplete one province to assist another when local disturbances or uprisings occur. This could be avoided by having a sufficiency of well-trained constabulary companies at each district headquarters. To attempt by these means alone to maintain public order throughout the archipelago would mean a greater outlay of public funds than the Commission deems advisable to allot or thinks the revenues will permit. The insular government has therefore reckoned upon permanent assistance from the federal native contingent created preeminently for Philippine service.

There are some, however, who believe that the Congressional act of January 30, 1903, contemplated merely temporary use, such, for example, as punitive expeditions, after which the scouts were to be returned to the military authorities. This is truly unfortunate, firstly, because the service in these islands requires the establishment of numerous stations that will prevent disturbances and the organization of ladrone bands that would quickly become serious without some restraining force near at hand; and, secondly, because some scout officers imbued with that same idea fail, in consequence, to show proper sympathy with service under the civil government. From intimate knowledge of scouts, especially in the field, I am persuaded that the present tendency of making American soldiers of them is carried too far. It is prejudicial to both officers

and men. For example, the ration is more than sufficient in quantity and the company impedimenta are assuming proportions equal to those of American companies. A system that demands ice and fresh meat for a force that has never had the former and but a limited quantity of the latter does not commend itself, and should not be encouraged where transportation is difficult and expensive.

The system applied to the scouts reflects disadvantageously upon the revenues available for constabulary, and the scouts, by being made less mobile, are less fit for the services required of them under the insular government.

The recent organization of scouts into battalions was strongly recommended by the undersigned, particularly that the detached scout posts might have closer supervision and inspection and that the insular government might secure the service of additional skilled officers, of which it is greatly in need. Unfortunately the scout majors were not put under the civil governor, even when their commands were, and some of them have been, continuously clamoring to have their scattered companies united. If they were assigned as originally requested, they would not only have the command of their battalions but would be intrusted with the responsible duties connected with the maintenance of order over large areas. In a word, the battalion organizations have not up to the present time been favorable to the local requirements of the insular government. If higher authorities insist upon a continuous liberal use of scouts, in order that the constabulary may be brought within the appropriation recently designated, it is important that many small stations be held and that the majors be put under the orders of the governor-general when their commands are so disposed.

In general the scouts have rendered the insular government valuable service, and a number of the officers have merited the highest praise for their untiring energy and steadfast zeal in the discharge of all that has been required of them. Still there are those who are not in sympathy with the aims of the insular government.

It is of paramount importance that whatever system of assistance by federal forces may be decided upon by higher authorities, or whatever legislation, if any, may be enacted looking to this end, the troops so used recognize a certain dependence upon the governor-general.

OFFICERS.

With the disappearance of armed bands the military phase of the service of constabulary officers yields in importance to their work as political agents. To successfully discharge his duties a constabulary officer must be a real man, both mentally and physically. He must possess intelligence, education, and tact sufficient to make him the peer or superior of the provincial and municipal officials with whom he has to deal; he must be strong in the law relating to his profession; he must possess sufficient judicial sense to properly decide the various minor differences that are brought to him in remote barrios where he is often the only American, and above all he must be considerate of others and yet have sufficient acumen to avoid the toils of clever mischief-makers. He must also know well how to maintain cohesion and discipline in his command; he must be able to support the fatigues of rigorous expeditions in almost impassible country, at times on the poorest food; he must have the courage to lead his men against overwhelming odds and, if necessary, fight hand to hand against well-armed fanatics.

The importance of the above requisites become daily greater and the impossibility of securing officers possessing these attributes in sufficient degree at the present salaries more emphatic. That it was necessary to request the resignation of 33 officers and summarily dismiss 19 within little more than a year is conclusive proof that men of a higher type are demanded. In the early days of the organization of the bureau, when promotion was faster than now and the duties were chiefly and almost continuously the pursuit of armed bands, the requirements due in a large measure to the changed conditions of the present were not so imperative.

With better-paid officers, possessing the attributes cited above, the rank and file can be materially decreased, so as to effect a considerable reduction in cost of the bureau and a betterment of the service.

DENUNCIATION OF THE CONSTABULARY.

The recent attacks, political and otherwise, on the constabulary have left a very unfavorable impression upon the minds of those who have heard but one

side of the question. There can be no doubt but that abuses have occurred in this organization of more than 7,500 individuals; this has never been denied. Equally strong can it be affirmed that every complaint made has been investigated and every abuse duly punished. In loyal localities complaints are rarely made. Unprejudiced investigations show that in the majority of cases complaints are due to motives of vengeance or to local intrigues. The following is from an address delivered in Manila by the Hon. L. R. Wilfey, attorney-general for the Philippine Islands:

"It has been my duty as attorney-general to make an investigation of a large number of cases in which the constabulary were alleged to have committed abuses, but in the majority of them the complaints were without foundation. My opinion, based upon four years of experience, is, taking into consideration the conditions under which the constabulary has operated, that the number of abuses instead of having been abnormally large has been abnormally small."

It would, indeed, be remarkable that officers should knowingly permit that for which they are well aware they lose their commissions in disgrace, as well as their right to service in any other bureau in the Philippines.

The real causes of the recent attacks may be summed up as follows: (a) Discontent on the part of a particular American faction in little sympathy with the insular government over the use of scouts under the governor-general; (b) the desire of certain Filipino elements to have the constabulary put under the provincial governors; (c) the sincere and earnest wish of those who are desirous of cutting down insular expenses; and (d) above all, the general plan determined upon by Manila politicians to deprecate the government.

When conditions warrant the restoration of the writ of habeas corpus in Cavite and Batangas and when more scout companies shall have been returned to the military authorities, less will be heard of constabulary abuses and inefficiency.

AMERICAN TROOPS.

The importance of maintaining a liberal contingent of American troops in these islands directly proportionate to the number of arms put into the hands of Filipinos has not diminished with the rapid introduction of American laws and customs (see my previous recommendations concerning this subject). The recent continued libelous, false, and almost seditious publications of the native press clearly show that its sponsors are ignorant of the influence of their preachings on the incitable masses, or that they are indifferent to the results if they can but impede the progress of the Government, or that they are maliciously and willfully carrying out a policy with the determined object of causing such disturbances as will disgust America in its philanthropic oriental experiment to the point of renouncing it.

Last year there were nine regiments of infantry, four of cavalry, three batteries of artillery, and the necessary quota of engineers, signal corps, etc., a total of 12,500 men occupying 39 posts. This year there is an additional cavalry regiment, and a total of 12,500 men, occupying 48 posts. Scouts are not included in either case.

This force should not be diminished until the politicians have learned more prudence and a more just appreciation of the great educational, political, and commercial opportunities that have fallen to the islands.

MUNICIPAL POLICE.

What has been said about this body in my last two annual reports has been verified by this year's experience. The following extract is from Colonel Bandholtz's report, which contains also pertinent views of a majority of provincial officers of his district on the same subject:

"Reports from all provinces, verified in most cases by a personal inspection by the undersigned, show that the present municipal police organization as a whole is worse than useless. The police not only are seldom of any assistance to the constabulary in outside operations, but in very few instances have they even put a stop to gambling and petty thieving in the towns to which they belong. This condition I consider to be due to the fact that, from time immemorial, the Filipino police have been considered and treated as muchachos by the presidentes and other municipal officials."

With too few officers for purely constabulary work it is not practicable to carry out the provisions of Act No. 175 touching this important matter. Moreover, without a radical change in existing laws, it is impossible to make of the municipal police in the general case a force equal to the requirements of public order in the various townships. Laws adequate to accomplish this must necessarily assure proper pay, food, and clothing allowance, and must still further curtail the authority of the municipality and possibly that of the provincial board, otherwise the central government would be restricted in its use of this force. Within the past few days a provincial governor complained to me that a lieutenant of police in one of his important towns, who was a highly efficient officer, zealous in the discharge of his duties to the prejudice of gamblers, of which the municipal presidente was one, had with his force suffered such a reduction in pay that they could not purchase their food. He thereupon showed me a telegram saying that on his departure from the province the lieutenant had been deposed. Such occurrences are by no means the exception. In not a few cases municipal police have been shown before courts to have formed parts of ladrone bands and to have surreptitiously connived with them in various ways.

Where the presidente is an especially vigorous, upright man, with military instincts, or has had the good fortune to select such a one as teniente of police, the result of the operations of the police are very effective. Cases of this kind are the exception, and the policy of arming municipal police with bolos and clubs rather than with firearms is the outgrowth of three years' experience. The tendency of municipal authorities to continue the time-honored custom of imposition on the tao is not diminished by backing up the police with firearms. Until they are better paid and until constabulary officers are available for a more intimate inspection and command of them the municipal police will not be of any value operating alone against armed bands.

When education is more advanced, when peace conditions are better, and when barrio civilization is of a higher order municipal police will be more efficient, more regardful of personal rights, and less disposed to carry out illegal practices honorable by their antiquity. Due effort should be made to develop this force. It is but just to say that on occasions it has been a most useful and valuable auxiliary to the constabulary.

On June 30, 1905, there were in the municipal police force of the islands 22 captains, 110 lieutenants, 375 sergeants, 1,049 corporals, and 4,508 privates, a total of 6,064, compared with the following numbers in 1903 and 1904, respectively: 10 captains, 171 lieutenants, 688 sergeants, 1,181 corporals, and 7,873 privates, total, 9,925; and 8 captains, 124 lieutenants, 405 sergeants, 909 corporals, and 5,606 privates, a total of 7,052.

The maintenance of public order in these islands will for many years be the cause of large expenditures which must be boldly faced, even to the detriment of other important appropriations.

COST OF THE CONSTABULARY.

During the fiscal year just ended there was expended for this bureau ₱4,133,367.08, of which approximately ₱324,454.15 was for the maintenance and construction of telegraph and telephone lines, exclusive of the cost of iron poles and those articles chargeable to other subheads, such as clothing, equipage, stationery, medical treatment, etc., which would probably make a total of ₱424,000 for the telegraph division. It is also estimated that the additional cost due to supplying commissaries to provincial and insular officials, and to maintaining the Baguio stage line, transporting provincial prisoners, etc., which are not strictly proper charges against this bureau, amounts to approximately ₱150,000. Deducting these sums from the total expenditures leaves ₱3,559,367.08, much of which is due to the campaigns in Cavite-Batangas and Samar. In a word, the maintenance of the insular force has cost ₱508 per head, as against \$1,000 gold per man for American soldiers.

By organizing the constabulary into small companies throughout the archipelago, thereby bringing the officers and men into more permanent and closer contact, the efficiency of each will be increased, and a corresponding diminution in numbers can be effected. This would show a considerable economy in the coming year, but it should be accompanied by a slight increase of officers.

TELEGRAPH DIVISION.

It is not just to charge the cost of the telegraph division to the constabulary without crediting the bureau with its earnings. The report of the superintendent of the division, Captain Wheat, shows what may be done with his division toward making it self-supporting whenever the Commission so decides. At the present time this division has 2,267.75 miles of telegraph, 2,348.75 miles of telephone, and 169,217 miles of cable lines, while the Signal Corps, U. S. Army, has 1,331 miles of telegraph, 74.75 miles of telephone, and 1,451.791 miles of cable lines. The former handled 571,935 messages and the latter 1,469,950 (sent, received, and relayed) during the year, approximately 200,000 and 300,000 original messages, respectively. Reckoning each message at 80 centavos (20 words, at 4 centavos per word, which is conservative as to present length of message), the income from this source would amount to ₱400,000. I desire to especially commend Captain Wheat for the thorough grasp which he has over his work, for the good service that he has maintained, and for the progressive, healthy tone that exists in his division.

MEDICAL DIVISION.

With few exceptions the constabulary should have a medical officer in every province, but for reasons of economy it is not recommended. I do, however, recommend the passage of the long-considered bill whereby constabulary medical officers may serve as presidents of provincial boards of health at an increase of \$45 pay per month to the officers, and a saving of from \$400 to \$1,000 per annum to each province. This would be in the interest of economy; it would promote the efficiency of the constabulary medical division, by making it possible to secure higher grade physicians, and it would improve sanitation in the provinces.

The campaign in Cavite has demanded the services of Doctor Baker, superintendent of the medical division, to the disadvantage of the latter, but decidedly favorable to the extermination of ladronism there. His services have been of a high order.

PAY DIVISION.

It has been proposed, for supposed reasons of economy, to consolidate the pay division of the constabulary into a central disbursing bureau. If it were possible to pay all the constabulary force by check from Manila, as may be done with the personnel of other bureaus, or even were it practicable to put supply officers, who are also provincial paymasters, under this central bureau, this proposition would merit careful and serious attention. As a matter of fact, the payment of constabulary—numerous and scattered as it must be—presents difficulties to such a proposition that are not found in any other bureau; moreover, the present system is satisfactory, very economical, and the division is well administered by a highly capable disbursing officer. By agreement with the auditor, all subsistence accounts are audited in the constabulary bureau, and it is my intention to put Paymaster Robertson also in charge of this work. It is not believed that the economy obtained, if any, would at all compensate for the divided authority that would result, and for the loss of control by the chief of bureau of one of the administrative elements most important to the success of the whole.

COMMISSARY.

It has also been proposed to transfer the constabulary supply store to the insular purchasing agent, not because it is not well and economically administered, but rather that a very small apparent saving might be made in the bureau of constabulary. What has been said of the pay division is almost wholly true of the commissary. Supply officers are provincial commissaries; and, as stated above, divided authority and partial loss of control would follow. The country has not yet reached that condition where we can expect to be free from disturbances requiring extraordinary efforts in making hasty distribution of supplies. It is not yet wise to depend upon another bureau in such times; recent experiences have demonstrated this. Moreover, we have fully tried exactly what is now proposed and gave it up as unsatisfactory. This bureau has authority—and profits by it—to purchase supplies from the insular purchasing agent.

To put the principal disbursing officer of one bureau under another while 40 junior disbursing officers remain with their own, and to dispose of the principal commissary officer of a bureau likewise, while 40 junior ones remain with their own, appears to be a new idea in administration which I hope will not be put into execution without most careful deliberation.

The report of the chief supply officer relating to these matters is worthy of perusal. Captain Fisk's success in administering his division has been the subject of praise by all who are acquainted with his work. His report shows that few mercantile enterprises are conducted so economically. Just as the various supply divisions are, in Manila, concentrated under the chief supply officer, so in the provinces the supply officer combined in himself the duties of paymaster, commissary, and quartermaster.

Special attention is invited to the full and detailed reports of the district chiefs, the chief supply officer, and the superintendent of information division, which are forwarded with this.

SPECIAL EVENTS, BY DISTRICTS.

FIRST DISTRICT (TAGÁLOG).—COLONEL SCOTT.

The following important ladrone leaders have been killed or captured and their bands destroyed:

Mendigoring and Felix Encarnacion, in Bataan, leaving this province in better condition than ever before known; Dionicio Velásquez and Ángelo San Pedro, both of the "Santa Iglesia," in Nueva Écija; Esteban Infante, insurrecto colonel, who had never surrendered, in Cavite; and Apolonio Samson, the coequal and contemporary of Julián Santos and Faustino Guillermo, in the mountains of Bulacán.

Three incipient Katipunans, one in Pangasinán, one in Zambales, and the other in Tárlac, headed by "generals," with seals and the usual paraphernalia, have been destroyed, and the promoters duly sentenced and incarcerated. With the increase in value of carabaos there has developed in the northern provinces of this district a system of stealing them and of falsifying the documents of ownership that challenges the cleverest detectives.

SECOND DISTRICT (TAGÁLOG AND BICOL).—COLONEL BANDHOLTS.

The outlaw leaders, Agustín Saría, José Roldán, Francisco Gamboa, and Vicente Padilla, have been killed and their followers exterminated. The three former formed a coterie which dominated limited parts of the provinces of Albay and Ambos Camarines, while the latter confined his operations to Romblon. Nicolas Encallado, the outlaw leader who operated along the Laguna-Tayabas border, was forced to surrender, with eleven rifles.

THIRD DISTRICT (VISAYAN).—COLONEL TAYLOR.

The outlaw leader, Julian Vertuoso, surrendered in Cápiz, and in Antique the mountain chief Ompong was killed and his band depleted. The following leaders have also been killed during the year: Sano, the worst character of Iloilo; "Pope" Isio, who was for twenty years the leader of the lawless element in Negros; Juan Tomayo, in Leyte, the perpetrator of many crimes covering a period of many years; Enrique Dagohob, by Captain Stacy, U. S. Army, in Sámar, one of the prime movers and organizers of the pulajan uprising in that island. Since the campaign began in Sámar, 87 pulajan officers have been captured, killed, or forced to surrender. The percentage of officers to men in this fanatical body is unduly large.

FOURTH DISTRICT (ILOCANO AND IGORROTE).—MAJOR CRAWFORD.

Maurice Sibley, the deserter from the Sixteenth U. S. Infantry, who was at the head of a band of outlaws in Isabela, was forced to surrender with all his followers. Various minor encounters have taken place between the head hunters of the remote mountain rancherías, and there were some differences between the adherents of the Roman Catholic Church and the followers of the Aglipayan movement; but in general the district is entirely quiet.

FIFTH DISTRICT (MORO).—COLONEL HARBORD.

In the province of Misamis political agitators have, during the past year, succeeded in causing a spirit of rebellion in localities where the masses are unusually ignorant. The suppression of this required active field work of the constabulary for nearly eight months. During this campaign 270 outlaws, including the leaders, were killed, captured, or surrendered, due largely to the brilliant work of the senior inspector, Captain Gallant.

Datto Pala, a Moro who had committed murders in Borneo and fled to Joló, gathered about him a group of malcontents which assumed grave proportions. An expedition under the department commander was made against him, and he and nearly all of his followers were killed after several days' hard fighting through swamps and jungles. During this short campaign the Moro constabulary took an active part in several engagements and in the assault on the fort where Pala and his principal followers were killed. The action of the constabulary won the unstinted praise of the officers present and special official mention of the commanding general, Major-General Wood.

PROVISIONAL DISTRICT (TAGÁLOG).—COLONEL BAKER.

In Cavite-Batangas the vigorous campaign during the past four months has resulted in the death, capture, or surrender of the following ladrone leaders, some of whom have defied the government for years, the two provinces being at the present time freer of outlaws than at any time in their history:

Andrés Villanueva, Cosme Caro, Masigla, Segundo Poblete, and Alvarez, killed; Fructuoso Vito, Gregorio Flores, Aniceto Oruga, Vicente Girón, Bartolomé Montalón, Julián Ramos, Costes, Mariano Mendoza (the leader of the attack on Parañaque), and Ambrosio del Rosario, surrendered. With the above leaders have been taken several hundreds of their followers, with a large number of arms, of which the army obtained 36, the scouts 42, the police 32, and the constabulary 406. Of the aggregate of 422 killed, captured, and surrendered the army accounted for 53, the scouts for 38, the police for 21, and the constabulary for 310.

The following shows the results of operations for the present year by districts; also a comparison with the two preceding years:

	Provisional district.	First district.	Second district.	Third district.	Fourth district.	Fifth district.	Total.		
							1905.	1904.	1903.
Arms captured:									
Carbines	61	11	5	11	2	9	90		
Rifles	110	71	16	32	16	55	301	306	449
Shotguns	130	57	22	79	45	15	348	124	130
Revolvers	210	90	8	49	5	26	391	184	396
Cannon	1		1	3	1	19	25	2	3
Bolts	36	33	17	765		19	890	288	2,498
Ammunition	4,154	1,861	231		925	60	7,591	6,616	
Stolen animals recovered:									
Carabao	11	79	2	48	12	19	168	494	1,291
Horses	6	35			16	2	59	287	408
Number patrols, expeditions, etc.	455	3,174	122	5,250	1,654	389	11,044	6,498	5,351
Miles covered	14,953	90,803	46,122	135,000	24,664	21,364	332,936	158,532	222,457
Number of encounters with outlaws	27	120	41	152	2	41	383	235	357
Outlaws killed	49	52	61	1,032	1	132	1,297	431	1,185
Outlaws wounded	(7)	34	22	268		30	421	139	
Outlaws captured	373	263	142	519	1	296	1,564	1,364	2,722
Enlisted men deserted	1	3	3	11	1	16	35	52	84
Enlisted men killed	1	8	3	26	1	12	51	32	53
Enlisted men wounded	1			14		21	21	21	25
Enlisted men died	1	10	16	26	18	24	96	118	
Prisoners sentenced:									
To more than 2 years	253	192	107	682	117	76	1,427	1,070	
To less than 2 years	191	381	754	700	303	57	2,386	2,238	
Prisoners in provincial jail at end of year	203	226	863	871	292	159	2,714	2,834	
Officers killed		1		6		1	3	2	5
Officers wounded		1					7		5
Officers died	1	1				1	4	5	7

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The foregoing table shows that there were 1,297 outlaws killed in 1905 as compared with 431 in 1904 and 1,185 in 1903; that the constabulary casualties, killed and wounded, were 84 in 1905, 55 in 1904, and 88 in 1903; that the firearms of all classes captured were 1,155 in 1905, 706 in 1904, and 948 in 1903; that the miles covered in patrols, reconnaissances, and the pursuit of criminals were, respectively, 332,936, 158,532, and 222,457; that the percentage in desertions were 0.005 in 1905, 0.007 in 1904, and 0.013 in 1903. This shows that the loss by desertion was scarcely appreciable.

The past year has been one of the most trying since the organization of the constabulary. A shortage of officers and almost continuous field work, notably in parts of the third district and in several Tagalog provinces, have made strenuous demands upon the service. Officers and men have responded superbly. Company A, Manila Battalion, operating in Samar during the greater part of the year, has since its organization had every noncommissioned officer wounded and has never lost a gun; Company B, Iloilo Battalion, had served so continuously in the field for two years in Iloilo, Cebu, Negros, Leyte, and Samar, that blouses in that time were an unnecessary luxury and had never been issued.

The following officers have met their death or been wounded in the discharge of their duties:

Killed.

Name.	Manner.	Place.	Date.
Barrett, Capt. Henry	In action	Ormoc, Leyte	Aug. 25, 1904
Thornell, Second Lieut. Joe	Drowned	Pangasinan Province	Aug. 28, 1904
Mannison, Capt. C. E.	do	Batangas Province	Sept. 23, 1904
Barry, First Lieut. G. E.	In action	Antique Province	Oct. 18, 1904
Hayson, Capt. T. B.	Murdered by Moro	Siasi, Sulu	May 11, 1905

Wounded.

Name.	Nature of wound.	Place.	Date.
Crockett, Capt. C. I.	Chest, slight (bolo)	Bulao, Samar	Aug. 21, 1904
Do	Arm, severe (bullet)	Gumay, Samar	Feb. 21, 1905
Fawcett, Second Lieut. J.	Foot, severe (bullet)	Bataan Province	Jan. 24, 1905
Williams, Second Lieut. W. C.	Arm, severe (bullet)	San Vicente, Samar	Mar. 6, 1905
Grove, Capt. W. S.	Head, slight (bullet)	Ormoc, Leyte	Apr. 29, 1905
Taylor, Col. W. C.	Jaw, dangerous (bullet)	Magtaon, Samar	May 17, 1905
Lewis, First Lieut. J. R.	Leg, slight (bullet)	Iloilo Province	June 23, 1905

In twenty-three years' service I have not known of a higher order of courage and greater fidelity to duty than has been shown by the generality of constabulary officers.

PERMANENT BUILDINGS.

As a business measure, it is incumbent upon the bureau to take up the subject of governmental ownership of barracks and officers' quarters at places where permanency of posts is recognized. In Zamboanga we are obliged to pay a monthly rental of ₱75 for buildings and ground that could have been purchased eighteen months since for \$2,200. In the same town we pay ₱140 per month for a building that has just been sold for \$8,000, and we have been notified that the building is now required by the new owners. Such cases are not unusual in other parts of the islands.

BETTER ARMS.

The necessity of a better firearm for the constabulary has been clear for a long time, but, awaiting the distribution to American troops of the new service arm, no recommendations have been made. Now, that this is about to be accomplished, and since the Krag-Jorgensen, which is to be discarded, will be of little or no value to the government and will not fire the ammunition of the new arm,

I have no hesitation in recommending the Krag carbine for both constabulary and scouts.

The following telegram from Captain Jones, senior inspector of Samar, argues in no uncertain way the need of a repeating arm against fanatical elements of these islands:

"Encountered pulajanes near Magtaon yesterday at 2.40 p. m. Probably 150 strong. Fight opened up by pulajanes, 2 men killed and 1 wounded at head of column at first fire. Pulajanes rushed entire line, breaking through just in front of cargadores; killed 2 men at this place. Also killed 1 of rear guard. Brisk rifle fire kept up by pulajanes from start for several minutes, killing 1 soldier and wounding 2 more. Three men wounded by bolos. Total casualties constabulary, 6 killed and 5 wounded. Pulajanes rushed second time, failed to affect our rally. Thirty pulajanes counted after fight dead, including 1 major and 2 captains. En route to Calbiga with wounded."

After firing one round with the present arm (Springfield), the soldier can not possibly reload in time to have his weapon available as a firearm in these bolo rushes. During the act of reloading he must continually back in order to avoid the bolo of the fanatic, and he is therefore at a great disadvantage as compared with his antagonist armed with a powerful cutting weapon. With a magazine carbine the constabulary would have won a much more decisive victory and would in all probability not have suffered half the casualties.

In several engagements during the past year against pulajanes (involving both scouts and constabulary) we have lost men and arms, to say nothing of prestige, by reason of not having a magazine arm. The unsuitability of the Springfield has cost the government many lives and much unnecessary expenditure of treasure in these islands.

It is highly important that the carbine be provided with a light bayonet to increase the chances of success in close fighting, such as we recently had in Iloilo, and above all, against bolo rushes such as frequently occurred in Samar. It is understood that the present bayonet can be adapted to the Krag carbine, and I so recommend.

CONCLUSION.

Although there are fewer depredations committed, fewer ladrone bands in existence, and fewer firearms in the hands of unauthorized persons than ever before since American occupation, economic and political conditions cause considerable unrest in certain localities. With prospects for better harvests, conditions should materially improve; yet the time is remote when the government can dispense with a strong force in maintaining the tranquillity necessary for a proper development of the islands. In parts of nearly every province we are confronted with elements whose standard of life is so low, and whose dependence upon the old system of bossism is so great that nothing short of a strong restraining and directing force will suffice to stay the one and guide the other under the emancipating laws of the Commission.

Whatever be the force employed, it must for many years be directed by the central government. Whether it be called constabulary or scouts, whether both varieties remain, whether the pay be from the Federal or Insular Government or both, and whether or not American troops assist in normal times are questions for the consideration of higher authorities. But the force that is used must have cohesion and discipline, must be in full sympathy with the policy of the Commission, and should be directly subordinate to the governor-general.

Very respectfully,

HENRY T. ALLEN,
Brigadier-General, Chief of Constabulary.

The SECRETARY OF COMMERCE AND POLICE,

Manila, P. I.



CONSTABULARY OF ZAMBALES SCOUTING IN THE AGNO VALLEY DURING THE RAINY SEASON.

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 39

Strength report and station list, Philippines constabulary, June 15, 1905.

FIRST DISTRICT.

Headquarters—Col. W. S. Scott, commanding; First Lieut. J. Benton Clausen, adjutant; Capt. Lewis Main, acting supply officer; Capt. W. P. Baker, surgeon.

BATAÁN PROVINCE (95).

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Balanga	3	47	Second Lieut. John Fawcett, senior inspector; Third Lieut. Romualdo Lelán; Third Lieut. Douglas B. Gilbert.
Bagac	1	14	Third Lieut. R. P. Yates, jr.
Mabatang		12	
Morong		14	
Special duty:			
Telegraph division		3	
In Manila headquarters, first district.	1		Third Lieut. Lorenzo Ramos.
Provincial strength	5	90	
Attached from Cavite		1	
Detached service from Nueva Vizcaya		20	

Attached: Telegraph operators, 2; civilian lineman, 1; enlisted man, medical division, 1.

BATANGAS PROVINCE (200).

Batangas	4	75	Capt. W. E. Thompson, senior inspector; Second Lieut. L. T. Rohrer; Second Lieut. M. Flaherty, supply officer; Subinspector L. V. Advincula.
Bayuyungan	1		First Lieut. S. C. Boyer.
Lipa	1	30	Second Lieut. A. K. Brown.
Tranca	1	19	Subinspector H. Concepcion.
Detached service, Cavite Province	1	54	Third Lieut. L. G. Bablera.
Special duty, telegraph division		6	
Sick in hospital at Camp McGrath, Batangas		4	
Provincial strength	8	188	
Detached service from fourth provisional company:			
At Bayuyungan, Batangas, Philippine Islands		30	
At Barrandal, Batangas, Philippine Islands	1	20	Subinspector Juan Vidal.
Detached from Cavite, Taal	1	30	Third Lieut. José Velasquez.
Santol, Batangas, Philippine Islands	1	20	Third Lieut. N. C. Barry.

Attached: Civilian telegraph operators, 4; enlisted man, medical division, 1.

BULACÁN PROVINCE (165).

Malolos	2	46	Capt. R. B. Kavanagh, senior inspector; Third Lieut. Eulogio Reyes.
San Miguel	2	23	Third Lieut. O. A. Tomlinson; Subinspector Orlino.
Norzagaray	2	29	First Lieutenant Burrous; Subinspector Cueto.
Detached service in Manila garrison		20	
Provincial strength	6	118	

Attached: Enlisted man, telegraph division, 1; enlisted man, medical division, 1.

CAVITE PROVINCE (250).

Cavite	4	47	Capt. C. E. Nathorst, senior inspector; First Lieut. C. D. Boone; Second Lieut. I. A. Opperman, supply officer; Subinspector F. Rojas, M. D.
Alfonso	1	56	Second Lieut. Wash. Grayson.
Méndez Nuñez	1	16	Third Lieut. Omar D. Conger.
Buenavista	5	158	Subinspector Juan Estrella; Second Lieut. F. A. Sims; Third Lieut. José Kerr, information division; Third Lieut. J. Sullivan; Third Lieut. G. McCaskey, M. D.

*Strength report and station list, Philippines constabulary, June 15, 1905—Continued.***FIRST DISTRICT—Continued.****CAVITE PROVINCE (250)—Continued.**

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Silang	3	49	Capt. B. L. Smith; Capt. R. Crame, information division; First Lieut. F. Lorente.
San Nicolás	2	48	Second Lieut. Furlong Leonard; Third Lieut. H. H. Johnson.
Bacoor	2	62	First Lieut. J. L. F. Tharp; Subinspector V. Domingo.
San Francisco de Malabón	2	55	Second Lieut. J. J. McLean; Subinspector Antonio Máximo.
Indang	1	.....	First Lieut. Aurelio Ramos, I. D.
Special duty, telegraph division .....	.....	8	
Confined in hands of civil authority .....	.....	1	
Detached service in Batangas Province	2	50	Second Lieut. L. T. Rohrer; Third Lieut. José Velásquez.
Sick hospital, Indang .....	.....	1	
Total on duty	23	551	
Detached service from—			
Third Provincial Company	1	31	
Fourth Provincial Company	3	85	
Sixth Provincial Company	3	94	
Manila Garrison .....	.....	29	
Laguna Province	1	.....
Information division	3	.....
Medical division	2	4	
Fifth district	2	48	
Batangas Province .....	.....	16	
Unassigned	1	.....	Capt. C. E. Nathorst, acting senior inspector.
Total on detached service	16	807	
Provincial strength	7	244	

LAGUNA PROVINCE (140).

Santa Cruz	2	39	Third Lieut. Y. O. Conchegui, supply officer; Subinspector M. Cavestany.
Bay	1	24	Third Lieut. Harry Davis.
Cabuyao	2	64	Capt. C. C. Smith, senior inspector; Third Lieut. D. D. Strong.
Calauan .....	.....	1	
Bifilang .....	.....	1	
Special duty, telegraph division .....	.....	3	
Absent with leave	1	.....	First Lieut. Austin G. Barber.
Confined in hands of civil authorities .....	.....	1	
Sick in hospital, Calamba .....	.....	1	
Detached service in Bacoor, Cavite	1	.....	Second Lieut. F. J. Baum.
Detached service, school of application, Manila .....	.....	2	
Provincial strength	7	136	

Attached: Civilian linemen, 3; enlisted man, medical division, 1.

NUEVA ÉCIJA PROVINCE (185).

San Isidro	3	79	Capt. W. O. Parsons, senior inspector; Second Lieut. J. McRae, supply officer; Second Lieut. G. H. Imboden.
San José	1	23	Third Lieut. J. M. Mathews.
Aliaga	1	25	Subinspector A. Buencamino.
Detached service in Manila .....	.....	28	
Detached service in Rizal	1	.....	Third Lieut. J. Domínguez.
Provincial strength	6	155	

Attached: Enlisted men, telegraph division, 4; civilian telegraph operators, 2.

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 41

Strength report and station list, Philippines constabulary, June 15, 1905—Continued.

FIRST DISTRICT—Continued.

NUEVA VIZCAYA PROVINCE (185).

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Bayombong.....	3	70	Maj. H. B. Orwig, senior inspector; Third Lieut. L. R. Nicholson, supply officer; Subinspector H. L. Logan. Second Lieut. L. E. Case.
Banaue.....	1	40	
Payauan.....		20	
Santa Fe.....		10	
Special duty telegraph division.....		4	
Detached service, school in Manila.....		2	First Lieut. C. J. Bates.
In Rizal.....	1		
In Samar.....		20	
In Bataan.....		20	
Provincial strength.....	5	186	

Attached: Telegraph inspector, 1; civilian operators, 2; civilian linemen, 2; medical inspector, 1; enlisted men, medical division, 4.

PAMPANGA PROVINCE (140).

San Fernando.....	2	41	First Lieut. C. A. Howard, acting senior inspector; Second Lieut. H. S. Breeze, supply officer.
Arayat.....		20	
Candaba.....		20	Subinspector Canuto Artao. Capt. H. A. Hutchings, senior inspector; Subinspector A. Vergara.
Florida Blanca.....	1	24	
On expedition.....	2	15	
Detached service in Manila.....		8	
Provincial strength.....	5	128	
Detached service from constabulary, Tarlac.....		1	

Attached: Telegraph inspector, 1; civilian telegraph operator, 1; civilian lineman, 1; enlisted men, telegraph division, 4.

PANGASINÁN PROVINCE (210).

Dagupan.....	5	107	Capt. J. F. W. Rickards, senior inspector; Second Lieut. De F. M. Gunnison; First Lieut. C. E. Bennett; Third Lieut. H. F. Alexander, supply officer; Third Lieut. A. C. Roxas. Third Lieut. R. Monserrat. Subinspector N. Belarmino.
Lingayén.....	1	22	
Alaminos.....	1	20	
Special duty, telegraph division.....		13	
Sick in hospital, Manila.....		1	
Detached service in Manila.....		47	
Provincial strength.....	7	210	

Attached: Telegraph inspectors, 2; enlisted men, telegraph division, 3; civilian telegraph operators, 2; enlisted man, medical division, 1.

RIZAL PROVINCE (220).

Pasig.....	3	42	Capt. Wm. W. Warren, senior inspector; Lieut. Chas. B. Lehmer; Lieut. R. Gano Koehler, supply officer. Lieutenant McLeod; Subinspector V. Domingo. Lieut. Wm. Schermerhorn. Lieut. George Middleton. Lieut. Charles J. Bates. Lieut. Juan Dominguez.
Camp Baker.....	2	40	
Malabón.....	1	35	
Montalban.....	1	30	
Bosoboso.....	1	35	
Antipolo.....	1	12	
Detached service, governor, Dancel.....		3	
Confined in hands of civil authorities.....		1	
Sick in hospital, Manila.....		2	
Detached service:			
In Laguna.....	1		
In Manila garrison.....		1	
Provincial strength.....	10	201	

Attached: Enlisted men, medical division, 2.

*Strength report and station list, Philippines constabulary, June 15, 1905—Continued.***FIRST DISTRICT—Continued.****TARLAC PROVINCE (111).**

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Tarlac	2	50	Capt. John W. Green, senior inspector; Second Lieut. J. B. Manning, supply officer.
Concepción	1	20	Subinspector R. M. Llorente.
Murcia		8	
Detached service:			
In Samar		20	
In Manila		7	
In San Fernando Pampanga		1	
Provincial strength	3	106	

Attached: Telegraph operator, 1; enlisted men, medical division, 9.

ZAMBALES PROVINCE (150).

Iba	2	66	Capt. Wm. Gwynne, senior inspector; Lieut. H. Wogan, supply officer.
Subic	1	26	Lieut. Elvezio Mini.
Santa Cruz	1	22	Subinspector M. Orfino.
Special duty, medical division		1	
Detached service:			
In Samar		19	
In Manila		2	
Special duty linemen		9	
Provincial strength	4	145	

Attached: Telegraph inspector, 1; enlisted men, telegraph division, 6; civilian lineman, 1; enlisted man, medical division, 1.

SECOND DISTRICT.*Headquarters.*—Col. H. H. Bandholtz, commanding district; Capt. E. R. Higgins, district adjutant; Capt. A. E. Culver, district supply officer; First Lieut. Edgar A. Farrow, district surgeon.**ALBAY PROVINCE (185).**

Albay	8	71	Capt. J. W. Swann, senior inspector; First Lieut. James Clark, supply officer; Subinspector E. Bactat.
Guinobatan	1	26	Second Lieut. J. T. Kellogg.
Polangui	1	35	Second Lieut. J. D. Ward.
Tabaco	1	20	Second Lieut. L. Kellermeyer.
Tivi		12	
Detached service:			
Samar	1		Second Lieut. R. O. Sommer.
Manila		19	
Special duty—Telegraph division		1	
Provincial strength	7	184	

Attached: Telegraph division, 1 officer (Second-Class Inspector D. T. Clement), 2 enlisted men, and civilian operators; medical division, 3 enlisted men.

AMBOS CAMARINES PROVINCE (167).

Nueva Cáceres	2	67	Capt. R. H. Griffiths, senior inspector; Second Lieut. W. T. Butler, supply officer.
Bato		8	
Buhí	1	12	First Lieut. H. E. Wright.
Capalonga	1	20	Second Lieut. W. Neill.
Tigaon	1	14	Second Lieut. J. M. McCloud.
Detached service:			
Samar		25	
Manila		2	
Provincial strength	6	148	

Attached: Medical division, 1 officer (Second Lieut. H. Talbott, M. D.) and 1 enlisted man; telegraph division, 1 civilian operator and 1 enlisted man (May 15, 1906).

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 43

Strength report and station list, Philippines constabulary, June 15, 1905—Continued.

SECOND DISTRICT—Continued.

MASBATE PROVINCE (66).

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Masbate	2	26	Capt. Z. F. Collett, senior inspector; Third Lieut. L. B. Wilhelm, supply officer.
Cataingan		11	
Detached service:			
Lucena		1	
Manila		2	
Samar		15	
Provincial strength	2	55	

MINDORO PROVINCE (130).

Calapan	3	61	Capt. H. O. Fletcher, senior inspector; Third Lieut. W. E. Moore, supply officer; Subinspector A. Garong. Second Lieut. C. E. Schwebel. Third Lieut. C. Bass.
Sablayan	1	23	
On leave	1		
Detached service:			
Samar		18	
Lucena		1	
Provincial strength	5	103	

Attached: Medical division, 1 enlisted man.

ROMBLÓN PROVINCE (54).

Romblón	1	30	Third Lieut. C. H. Bowers, supply officer.
Detached service:			
Samar		20	
Lucena		1	
Provincial strength	1	51	

SORSOGON PROVINCE (133).

Sorsogón	3	62	Capt. J. F. Quinn, senior inspector; Second Lieut. C. E. Lucas, supply officer; Second Lieut. R. O. F. Mann.
Bulan		16	
Bulusan	1	28	
Detached service:			First Lieut. J. Delaney.
Samar		20	
Manila		2	
Burias		3	
Lucena		1	
Provincial strength	4	132	

Attached: Medical division, 1 enlisted man, telegraph division, 1 civilian employee.

TAYABAS PROVINCE (270).

Lucena	6	147	Maj. J. B. Murphy, senior inspector; First Lieut. M. Olson, supply officer; Second Lieut. E. C. Stelton, Second Lieut. E. Schroeder; Third Lieut. W. W. Harn, assistant supply officer, Subinspector C. Jamias.
Boac	1	31	
Catanauan	1	27	
Lucban	1	41	Second Lieut. G. R. Duval. Subinspector L. A. Barretto.
Pitogo	1	35	
Present sick		6	
On leave	1		First Lieut. J. C. Buttner. Second Lieut. C. P. Hollingsworth. Second Lieut. C. E. McIlvaine.
Do	1		
Detached service, Samar	1	23	

REPORT OF THE PHILIPPINE COMMISSION.

Strength report and station list, Philippines constabulary, June 15, 1906—Continued.

SECOND DISTRICT—Continued.

TAYABAS PROVINCE (270)—Continued.

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Special duty:			
Telegraph division		22	
Medical division		1	
In confinement		1	
Provincial strength	13	334	

Attached: Second district, 2 officers (Second Lieuts. E. Schroeder and C. P. Hollingsworth) and 71 enlisted men; telegraph division, 2 civilian operators and 2 civilian linemen.

COMPANY A, SECOND DISTRICT (76).

Special duty, Lucena	1	68	Second Lieut. E. Schroeder.
Detached service, Boac	1		Second Lieut. C. P. Hollingsworth.
Present sick		3	
Total	2	71	

LUCENA HOSPITAL, SECOND DISTRICT.

Lucena	1	4	First Lieut. E. A. Farrow.
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Attached: Masbate, Romblón, Sorsogón, Tayabas, each 1 enlisted man.

THIRD DISTRICT.

Headquarters.—Col. Wallace C. Taylor, Philippines Constabulary, commanding, Iloilo, Panay. District staff: Capt. Lemuel E. Boren, Philippines Constabulary, adjutant; Capt. Thomas A. Campbell, Philippines Constabulary, supply officer; Capt. René Vandam, medical division, Philippines Constabulary, district surgeon; First Lieut. R. Francis Adams, Philippines Constabulary, auditor of subsistence (absent in Samar). Attached: Capt. Marcus F. Davies, telegraph division, Philippines Constabulary, telegraph officer, district of Panay; First Lieut. Eugene Walter, Philippines Constabulary, in charge of subsistence auditing office (on leave); Second Lieut. George Welborn, telegraph division, Philippines Constabulary, with telegraph officer, district of Panay.

ILOILO BATTALION (150).

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Company A:			
Danao, Cebu	2	46	First Lieut. C. Schreiner and Third Lieut. G. W. Reader.
Special duty, Cebu		1	
Company B: Catbalogan, Samar	1	49	Second Lieut. J. A. Jeancon.
Company C:			
Calbiga, Samar	1	48	Second Lieut. P. E. Hemmett.
Detached service, Manila		2	
Total for battalion	4	146	

ANTIQUÉ PROVINCE (180).

San José	2	48	Capt. S. M. Hibbard, senior inspector; Second Lieut. J. P. Caswell, supply officer.
Pisanan		10	
San Remigio		12	
Bugason		8	
Valderrama		15	
Pandan	1	30	First Lieut. J. S. Mohler.
Special duty, telegraph division (line-men)		5	
Detached service, Manila		2	
Total	3	126	

Attached: Medical division, 1 enlisted man.

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 45

Strength report and station list, Philippines constabulary, June 15, 1905—Continued.

THIRD DISTRICT—Continued.

BOHOL PROVINCE (60).

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Tagbilaran.....	1	36	Second Lieut. W. Friedlander, supply officer, acting senior inspector.
Detached service:			
Samar.....	1	18	Capt. H. J. Hunt, senior inspector.
Manila.....		3	
Special duty, telegraph division (linemen).		3	
Total for province.....	2	60	

Attached: Telegraph division, 1 enlisted man.

CÁPIZ PROVINCE (165).

Cápiz.....	2	54	Second Lieut. J. J. Guild, assistant senior inspector; Third Lieut. P. Newman, supply officer.
Calivo.....	1	22	Third Lieut. J. López.
Ibajay.....		10	
Tapaz.....	1	20	Subinspector P. Panag.
Special duty, telegraph (linemen).....		2	
Detached service:			
Manila.....	1	2	Capt. H. J. Castles, senior inspector.
Iloilo.....		47	
Cavite.....		6	
Absent sick (Iloilo Hospital).....		2	
Total for province.....	5	165	

Attached: Medical division, 1 enlisted man.

CEBÚ PROVINCE (200).

Cebú.....	4	64	Maj. H. P. Nevill, senior inspector; First Lieut. L. E. Sweet; Second Lieut. R. A. D. Ford, supply officer; Third Lieut. E. H. Walker.
Balamban.....	1	26	First Lieut. C. M. Pendleton.
Toledo.....	1	40	Second Lieut. E. K. Martin.
Camp Walker.....	1	43	Second Lieut. M. Luga.
Tuburan.....	1	24	Third Lieut. F. A. Crooks.
Detached service, Manila.....		2	
Total for province.....	8	199	

Attached: Telegraph division, 1 officer (First-class Inspector L. B. Manchester); Company A, Iloilo Battalion, 2 officers (First Lieut. C. Schreiner and Third Lieut. G. W. Read) and 47 enlisted men; Negros Occidental, 14 enlisted men.

ILOÍLO PROVINCE (300).

Jaro.....	3	59	Capt. J. R. Lewis, senior inspector; Second Lieut. F. W. Cannaday, supply officer; Third Lieut. R. H. Harrell.
León.....	1	47	First Lieut. H. L. Beazley.
Alimodian.....	1	1	Subinspector P. Martinez.
Tubungan.....		17	
Maasin.....	1	64	First Lieut. H. W. Coutermarsh.
Camp Sison.....		17	
Janluay.....	1	2	First Lieut. P. Lyons.
Passi.....		13	
Sara.....	1	14	Third Lieut. M. Guaso.
Special duty:			
Telegraph division (linemen).....		16	
District headquarters.....		1	
Subdivision of information.....		3	
Detached service:			
Manila.....		7	
Batangas.....	1		Second Lieut. F. L. Dunham.
Absent sick (Iloilo Hospital).....		8	
Absent on leave.....	1	1	Second Lieut. P. Guevara.
Total for province.....	10	270	

Attached: Telegraph division, 2 enlisted men; Cápiz, 47 enlisted men; Occidental Negros, 27 enlisted men; medical division, 1 enlisted man; Oriental Negros, 5 enlisted men.

Strength report and station list, Philippines constabulary, June 15, 1905—Continued.

THIRD DISTRICT—Continued.

LEYTE PROVINCE (225).

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Tacloban	4	20	Capt. W. S. Grove, senior inspector; Third Lieut. M. G. Browne, supply officer; Third Lieut. W. C. Williams, Third Lieut. S. C. Edmonson.
Tunga	1	50	Subinspector B. Soledad.
Jaro	1	30	Subinspector G. Abanilla.
Dolores		43	
Barauan	1	30	Subinspector F. Miranda.
Palompon		12	
Special duty, telegraph division (line-men).		4	
Detached service, Manila	1	4	Third Lieut. L. H. McAdow.
Special duty, Maasin	1		Second Lieut. J. Flores.
Total for province	9	198	

Attached: Telegraph division, 1 officer (Fourth-Class Inspector J. G. Minor).

OCCIDENTAL NEGROS PROVINCE (225).

Bacolod	2	59	Capt. W. A. Smith, senior inspector; First Lieut. E. S. Halle, supply officer.
Guimbalaon		22	
Camp Barry	1	29	First Lieut. M. Colmenares.
Camp Barrett	1	32	Third Lieut. A. Azcona.
Cabancalan		12	
Escalante		20	
Special duty, telegraph division (line-men).		10	
Detached service, Manila		2	
Absent sick, Iloilo		27	
Absent sick (Iloilo Hospital)		6	
Total for province	4	219	

Attached: Telegraph division, 1 officer (First-Class Inspector C. B. Compton) and 6 enlisted men; Medical division, 1 enlisted man.

ORIENTAL NEGROS PROVINCE (130).

Dumaguete	1	45	Third Lieut. B. W. Steventon, supply officer.
Bals		10	
Guijulugan		5	
Tayasan	1	24	Capt. R. H. Page, senior inspector.
Valle Hermoso		14	
Special duty, telegraph division (line-men).		6	
Detached service:			
Manila		3	
Iloilo		5	
Cebu		14	
Absent sick (Manila Hospital)		1	
Total for province	2	127	

Attached: Telegraph division, 1 officer (Second-Class Inspector G. Friel); Medical division, 1 enlisted man.

SÁMAR PROVINCE (225).

Catbalogan	3	49	Capt. R. W. Jones, senior inspector; First Lieut. W. A. Burbank, supply officer; Second Lieut. C. A. Tharp, assistant supply officer.
Balanigsa		80	
Lope de Vega	1	49	Third Lieut. P. C. Abenla.
San José de Bulao	1	76	First Lieut. G. B. Bowers.
Lavezares		8	
Paranes	1		First Lieut. M. J. Conway.
Catubig	1		Third Lieut. J. Sulse.
Calbiga	1		Subinspector T. Diaz.
Absent sick (Catbalogan Hospital)		5	
Detached service, Manila		1	
Special duty with Company B, Iloilo Battalion		1	
Total for province	8	219	

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 47

Strength report and station list, Philippines constabulary, June 15, 1905—Continued.

THIRD DISTRICT—Continued.

Attached: Telegraph division, 1 officer (first-class inspector G. F. Lyon) and 3 enlisted men; medical division, 3 officers (Second Lieut. V. H. Taylor, Second Lieut. J. V. Greene, and Third Lieut. B. M. Richardson) and 16 enlisted men; Company B, Iloilo Battalion, 1 officer (Second Lieut. F. A. Jeancon), 49 enlisted men; Company C, Iloilo Battalion, 1 officer (Second Lieut. F. E. Hemmett), 48 enlisted men; Company A, Manila Battalion, 1 officer (Subinspector A. Yance), 60 enlisted men; Company B, Manila Battalion, 3 officers (First Lieut. G. A. Herfet, Second Lieut. L. E. Jackson, Subinspector L. Puno), 63 enlisted men; enlisted men from Sorsogón, 20; Masbate, 15; Zambales, 19; Nueva Vizcaya, 20; Abra, 9; Cagayán, 2; Isabela, 1; Unión, 14; Ilocos Norte, 16; Ilocos Sur, 19; Camarines, 23; Mindoro, 18; Romblón, 20; Tayabas, 23; Tárlac, 20; Bohol, 18; additional, 10 officers (Capt. C. J. Kindler, assistant district supply officer; Capt. W. Green, Capt. F. Knoll, First Lieut. R. F. Adams, First Lieut. E. R. Hazard, Second Lieut. E. Calderón, Second Lieut. R. O. Sommers, Second Lieut. C. S. Holmes, Second Lieut. C. H. McIlvaine, and Third Lieut. J. D. Roades); awaiting transportation to station, 3 officers (Capt. H. J. Hunt, Capt. R. H. Poggi, First Lieut. C. M. Smith); total attached, 28 officers, 497 enlisted men; grand total in province, 31 officers, 716 enlisted men.

SUMMARY.

Where stationed.	Officers.	Enlisted men.	Where stationed.	Officers.	Enlisted men.
District headquarters	5	.....	Leyte	9	193
Iloilo Battalion	4	146	Occidental Negros	4	219
Antique	3	125	Oriental Negros	2	127
Bohol	2	60	Samar	8	219
Cápiz	5	165			
Cebu	8	199	Total district strength ..	60	1,728
Iloilo	10	270			

FOURTH DISTRICT.

Headquarters.—Maj. S. D. Crawford, assistant chief, Philippines constabulary, commanding; First Lieut. Edward Hartrum, district supply officer, acting adjutant; Capt. Thomas C. Walker, district surgeon.

BENGUET PROVINCE (50).

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Baguio	2	26	First Lieut. T. H. F. Diederich, senior inspector; Second Lieut. J. F. Egerton, supply officer.
Sablan		2	
Camp Four	1	15	First Lieut. John B. Schuetz.
Special duty, telegraph division		3	
Detached service:			
Fourth district headquarters		1	
Manila		2	
Total provincial strength	3	49	
Attached:			
Telegraph division	1	2	Third-Class Inspector L. H. McAdow.
From Lepanto-Bontoc		1	
Total	4	52	

CAGAYAN PROVINCE (150).

Tuguegarao	3	54	Capt. Henry Knauber, senior inspector; Second Lieut. L. A. Dowdel, supply officer; Second Lieut. Guy H. Greene.
Aparri		10	
Special duty, telegraph division		4	
Detached service:			
Samar	1	40	First Lieut. Ernest Hazard.
Manila		2	
Fourth district headquarters		4	
Sick in hospital		1	
Total provincial strength	4	115	
Attached:			
Medical division	1	5	Second Lieut. L. F. Raymond.
Telegraph division	1	2	First-Class Inspector F. P. Warren.
From Isabela	1	.....	Second Lieut. J. F. Treadway.
Total	7	122	

Strength report and station list, Philippines constabulary, June 15, 1905—Continued.

FOURTH DISTRICT—Continued.

ILOCOS NORTE PROVINCE (140).

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Laog	2	89	Third Lieut. O. C. Humphrey, supply officer; Subinspector F. Astudillo.
Detached service:			
Fourth district headquarters		7	
Batangas	2	5	Capt. B. L. Smith, senior inspector; Second Lieut. James J. McLean.
Samar		16	
Manila	1	2	Third Lieut. Agapito Bonson.
Sick in hospital, Manila		1	
Total provincial strength	5	120	
Attached:			
Telegraph division		5	
Medical division		1	
Total	5	126	

ILOCOS SUR PROVINCE (240).

Vigan	2	82	Capt. C. D. Lovejoy, senior inspector; Second Lieut. H. A. Duryea, supply officer.
Pandan		10	
San Esteban		9	
Candón	1	16	Subinspector G. Fernandez.
Bangued	1	32	Second Lieut. C. H. Allen.
San José	1	10	Third Lieut. H. Ballesta.
Special duty, telegraph division		6	
Detached service:			
Fourth district headquarters		12	
Samar	1	28	Second Lieut. Geo. S. Holmes.
Cavite		15	
Manila		4	
In hands civil authorities		1	
Total provincial strength	6	225	
Attached:			
Medical division		1	
Telegraph division	1	7	First-class Inspector Geo. Keech.
Total	7	233	

ISABELA PROVINCE (140).

Ilagan	2	45	Capt. Theo. I. Owens, senior inspector; Third Lieut. O. C. Whitaker, supply officer.
Echagüe	1	21	Third Lieut. H. G. Upham.
Detached service:			
Cagayán	1		Second Lieut. J. F. Treadway.
Samar	1	18	First Lieut. Geo. A. Helfert.
Batangas		10	
Manila		12	
Fourth district headquarters		3	
Special duty, telegraph division		5	
Total provincial strength	5	109	
Attached:			
Telegraph division		5	
Medical division		1	
Total	5	115	

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 49

Strength report and station list, Philippines constabulary, June 15, 1905—Continued.

FOURTH DISTRICT—Continued.

LA UNIÓN PROVINCE (90).

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
San Fernando	3	51	Capt. F. E. Cofren, senior inspector; Third Lieut. J. G. J. Knust, supply officer; Subinspector José Ochoa.
Rabon		4	
Rosario		7	Third Lieut. J. Sullivan.
Detached service:			
Batangas	1		
Samar		15	
Manila		2	
Fourth district headquarters		3	
On pass		1	Second-class Inspector A. M. Taylor.
Special duty, telegraph division		5	
Total provincial strength	4	88	
Attached:			
Medical division		2	
Telegraph division	1	4	
Total	5	94	

LEPANTO-BONTOC PROVINCE (140).

Cervantes	2	47	First Lieut. W. D. Harris, supply officer; Second Lieut. H. E. Miller.
Bontoc		19	
Lubuagan	1	10	Subinspector Santiago Robles.
Detached service:			
Cavite		47	Capt. A. E. Eckman, senior inspector; Third Lieut. Durkeys.
Fourth district headquarters		4	
Manila		2	
En route to Cervantes	2		
Total provincial strength	5	129	
Attached:			
Telegraph division		2	
Medical division		2	
Total	5	133	

DISTRICT HOSPITAL, VIGAN.

Attached to medical division		5	District surgeon in charge.
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SUMMARY.

	Officers.	Enlisted men.		Officers.	Enlisted men.
Benguet	3	49	La Unión	4	88
Cagayan	4	115	Lepanto-Bontoc	5	129
Ilocos Norte	5	120			
Ilocos Sur	6	225	Total	32	886
Isabela	5	109			

*Strength report and station list, Philippines constabulary, June 15, 1905—Continued.***FIFTH DISTRICT.**

ZAMBOANGA, P. I., June 25, 1905.

Headquarters.—Col. J. G. Harbord, commanding. District staff: First Lieut. F. J. O'Grady, adjutant; First Lieut. A. A. Cameron, surgeon; Second Lieut. W. M. Franklin, supply officer.

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
District headquarters	6		Col. J. G. Harbord, commanding; First Lieut. F. J. O'Grady, adjutant; Second Lieut. W. M. Franklin, supply officer; Third Lieut. G. D. Templeton, assistant supply officer; Third Lieut. E. L. Dunsworth, assistant supply officer; Capt. H. Coleman, awaiting transportation to Leyte.
Medical division	1	3	First Lieut. A. A. Cameron, surgeon (in Davao).
Medical division, Tukuran		1	
Headquarters strength	7	4	

COMPANY A, FIFTH DISTRICT (50).

Isabela de Basilan	1	49	Capt. C. M. Sandford, commanding.
Detached service:			
Bongao	1		First Lieut. F. Johnson.
Zamboanga	1		Subinspector V. Álvarez, special duty, under orders of provincial governor.
Do.		1	Sergt. P. Bonifacio, acting commissary-sergeant.
Company strength	3	50	

COTABATO PROVINCE (100).

Cotabato	2	71	Capt. G. D. Long, senior inspector; Second Lieut. H. Gilsheuser.
Libungan		7	Corporal Guinal.
Tumao		10	Corporal Baynudin.
Taviran		7	Corporal Tungal.
Detached service:			
Batangas	1	13	Third Lieut. L. Furlong.
Sulu		30	
In jail, Zamboanga		1	
Total	3	139	
Attached constabulary of Sulu		30	
Provincial strength	3	109	

DÁVAO PROVINCE (120).

Davao	2	62	Capt. W. B. Williams, senior inspector; First Lieut. W. C. Taulbee.
Mati	1	28	Subinspector A. Bernal.
Baganga	1	25	Third Lieut. G. O. Fort.
Detached service, Zamboanga		2	In hospital.
Provincial strength	4	117	

LANAO PROVINCE (100).

Iligan	3	64	Capt. E. W. Griffith, senior inspector; Third Lieut. J. L. Wood, and Subinspector P. Coletto, on detached service with 20 men of Surigao.
Misamis	1	25	Second Lieut. C. E. Heartt.
Detached service, Camp Overton		2	Sick in military hospital.
Total	4	91	
Attached constabulary of Surigao	1	20	
Provincial strength	3	71	

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 51

Strength report and station list, Philippines constabulary, June 15, 1905—Continued.

FIFTH DISTRICT—Continued.

MISAMIS PROVINCE (86).

Where stationed.	Officers.	Enlisted men.	Officers—name and rank.
Cagayan.....	2	62	Capt. J. J. Gallant, senior inspector, and Third Lieut. F. H. Campbell.
Initao.....		16	Sergeant Garcines.
Camp Overton.....	1		Second Lieut. Manuel Fortich, in military hospital.
Detached service:			
Manila.....		2	
Oroquieta.....		1	(Lineman.)
In confinement (civil authorities).....		2	
Attached telegraph division.....	1		Second Lieut. Chas. M. Sides.
Total.....	4	83	
Attached telegraph division.....	1		
Provincial strength.....	3	83	

SULU PROVINCE (120).

Siasi.....	2	40	First Lieut. F. S. De Witt, assistant senior inspector, and Third Lieut. F. M. Sowers.
Bongao.....	1	33	First Lieut. F. Johnson.
Detached service:			
Batangas.....	1	35	Third Lieut. H. H. Johnson.
Cotabato.....		30	
Total.....	4	138	
Attached:			
Company A, fifth district.....	1		Lieut. F. Johnson.
Constabulary of Cotabato.....		30	
Provincial strength.....	3	108	

SURIGAO PROVINCE (85).

Surigao.....	3	58	Capt. Ole Waloe, senior inspector; First Lieut. J. W. Lattimore, supply officer, and Third Lieut. W. A. Burrell, assistant supply officer.
Talacongan.....	1	15	Subinspector E. G. Zapanta.
Detached service:			
Lanao.....	1	20	Subinspector P. Coletto.
Manila.....		2	
Provincial strength.....	5	94	

ZAMBOANGA PROVINCE (150).

Zamboanga.....	2	61	Capt. R. H. Poggi, senior inspector, and Third Lieut. J. R. Youngblood.
Guarding Moro provincial jail.....	1	12	Subinspector A. Cariaga.
Dapitan.....	1	28	Second Lieut. G. A. Gallagher.
Dipolog.....		5	
Libungan.....		3	
Attached.....		7	
Tucuran.....	1	34	First Lieut. W. J. Platka.
Total.....	5	150	
Attached:			
Medical division.....		4	
Davao constabulary.....		2	
Company A.....		1	
Provincial strength.....	5	143	

Strength report and station list, Philippines constabulary, June 15, 1905—Continued.

SUMMARY.

	Officers.	Enlisted men.		Officers.	Enlisted men.
District headquarters	7	4	Sulu	3	108
Company A, fifth district	3	50	Surigao	5	94
Cotabato	3	109	Zamboanga	5	143
Davao	4	117			
Lanao	3	71	Fifth district strength ..	36	779
Misamis	3	83			

Strength list of Manila garrison, Philippines constabulary, Manila, P. I., June 16, 1905.

Organizations.	Officers.	Enlisted men.	Names of officers.
Post field and staff	3		Capt. Art. S. Guthrie, commanding; Second Lieut. S. A. Greenwell, supply officer; Third Lieut. José de los Reyes, adjutant.
Battalion field and staff		2	
Company A:			
On special duty at headquarters	1		Capt. Cary I. Crockett.
Philippines constabulary.			
Absent on detached service in Samar.	2	59	First Lieut. E. R. Hazard, commanding, and Subinspector Alejandro Yance.
Total	3	59	
Company B, absent on detached service in Samar.	3	70	Capt. Frank Knoll; First Lieut. Geo. A. Helfert, commanding, and Subinspector León Puno.
Mounted detachment	1	8	
Absent on detached service in Cavite.		29	
Absent with leave		1	Second Lieut. A. S. Ashe, commanding.
Total	1	38	
First Provisional Company	(a)	(a)	
Second Provisional Company	1	76	Subinspector Emilio García, commanding.
Subpost, San Juan del Monte		15	
Total	1	91	
Fifth Provisional Company	2	57	Second Lieut. A. VonWatzdorf, commanding, and Third Lieut. Wm. A. Durkers.
Band	1	76	First Lieut. W. H. Loving, commanding.
Medical division	1	9	Second Lieut. A. Butler.
Absent on detached duty—			
In La Laguna		1	
In Samar		3	
In Zambales		1	
Total	1	14	
Casual detachment	1		Third Lieut. L. D. Atkins.
Subpost San Juan del M.	1		Third Lieut. Agapito Bonson.
From Ilocos Sur		1	
From Company A, M. Battalion.		10	
From Samar (C. Bulacán)		10	
From Isabela		19	
From Albay		2	
From Samar (Company C, Iloilo Battalion).		1	
From Samar (La Unión)		1	
From Bataan (sick civil hospital) ..		4	
From Rizal (3 at civil hospital)		2	
Enlisted for constabulary, Mindoro ..		1	
Enlisted for Samar			
Total	2	52	

a No record.

Strength report and station list, Philippines constabulary, June 15, 1905—Continued.

SUMMARY.

	Officers.	Enlisted men.		Officers.	Enlisted men.
Post, field and staff.....	3	2	Fifth provisional company..	2	57
Battalion, field and staff.....	3	59	Band.....	1	76
Company A.....	3	70	Medical division.....	1	14
Company B.....	1	38	Casual detachment.....	2	52
Mounted detachment.....	1	91	Total.....	17	459
Second provisional company.....	1				

Strength report and station list, constabulary of Palawan, June 15, 1905.

[Authorized enlisted strength, 100.]

Station.	Number officers.	Number enlisted.	Officers' names and rank.
Cuyo.....	2	16	Wm. S. Tabberrah, second lieutenant and inspector; José Romasanta, sub-inspector.
Coron.....	1	14	Joseph Ponce de Leon, subinspector..
Puerto Princesa.....		15	
Balabac.....	1	45	F. Walker, second lieutenant and inspector.
Sick in hospital, Iloilo.....		1	
Detached service in Manila.....		2	
Total actual strength.....	4	93	
Attached:			
Telegraph division.....		1	First-class private.
Medical division.....		1	Do.

EXHIBIT 1.

REPORT OF THE OFFICER COMMANDING FIRST DISTRICT, PHILIPPINES CONSTABULARY.

HEADQUARTERS FIRST DISTRICT, PHILIPPINES CONSTABULARY,
Manila, June 30, 1905.

SIR: I have the honor to submit the following report of operations and conditions in the first district for the year ending June 30, 1905:

The district comprises the following provinces: Bataán, Batangas, Bulacán, Cavite, Leguna, Nueva Écija, Nueva Vizcaya, Pampanga, Pangasinán, Rizal, Tárlac, Zambales.

The provinces of Batangas, Cavite, Laguna, and Rizal were formed into a provisional district temporarily and placed under command of Col. D. J. Baker, jr., Philippines Constabulary, by paragraph 1, General Orders, No. 17, dated headquarters Philippines Constabulary, January 30, 1905. They are still at date of this report commanded by him, and he will submit a report covering operations and conditions from date of the quoted order.

Owing to the better facilities for reaching it, as all mail must pass through Manila to reach headquarters of the fourth district, it is respectfully suggested that the province of Benguet be attached to the first district.

In my last annual report I stated that conditions had materially improved, but noted small bands of ladrones in Cavite, Batangas, Laguna, one under Sakay in Rizal, one in Bataán, and a band of religious fanatics in Nueva Écija, under Salvador. The indications then were that we were making material progress against them, but that, like "brer rabbit," they were not exterminated, but were simply lying low, as we had our scouts and constabulary so distributed and kept them patrolling to such an extent that they were prevented from committing any depredations. I also stated that nothing short of extermination of the outlaws would settle them. The more determined of these ladrone leaders in Cavite and Batangas, however, were only watching their opportunity to

assemble and renew their depredations. This opportunity came in a way which was not unexpected. On the 30th of September the majority of the scout companies were depleted to a corporal's guard by discharge. The disturbances in Samar had necessitated depleting very largely other provinces of both officers and men to handle the Pulajan situation on that island, thus giving Montalon and Fellzardo the opportunity for which they had been waiting. The disturbing element were ripe for trouble, owing to dissatisfaction caused by misrepresentations concerning the internal-revenue law which had recently been passed by the Commission. They assembled their bands and attacked the constabulary at Parañaque, Rizal, on December 8, 1904, which detachment had no officer in command, the officer having been withdrawn for detached service. The constabulary there made but a feeble resistance, the result being that nearly all the arms and ammunition at that station fell into the hands of the outlaws.

Then followed the attack on Taal, Batangas, on January 5, 1905, in which the municipal authorities were implicated.

Emboldened by these successes, they next raided the town of San Francisco de Malabon, Cavite, on January 24, 1905, where a native inspector was in command. The outlaws succeeded in adding to their stock of arms and ammunition by capturing nearly all the guns of the constabulary and municipal police of that town. This decided the governor-general to suspend the writ of habeas corpus in Cavite and Batangas, and it is hoped the result will be the effectual cleaning out of these bands and that the people will be so inconvenienced that instead of sympathizing with and aiding outlaw bands an effort will be made to aid the authorities.

Since this step had to be taken it is to be regretted that it was not done more than two years ago, but no one could foresee that such radical measures would become necessary.

Prior to these raids, no depredations of note had been committed for a number of months in the district, the last being the robbery of the Tabacalera Company and Chinese merchants of Bay, Laguna, on December 10, 1903, the investigation into which convinced me that not only the municipal police aided, but the presidente knew of the intended raid and took no steps to prevent it, although he stated that two days previous he had notified the provincial governor. The constabulary, however, got no notice of the proposed raid.

When the infantry company was relieved from duty at San Francisco de Malabon, I asked for and had the Twenty-second Company of Scouts stationed there, feeling that the place was a hotbed of disloyal citizens and sympathizers with the outlaw element.

I also took the precaution when the officer at Parañaque wished to be absent to send another there from Pasig, and never allowed the station to be without an officer over night.

Owing to sickness I was compelled to go to the United States, and sailed on the 15th of September, returning 1st of March.

The exigencies of the service removed the officer from Parañaque and the scout company to Imus, thus weakening these places to the point that success attended the outlaws when they attacked them.

Since the raid on San Francisco de Malabon, no depredations have been committed in those provinces, and active campaigning by scouts and constabulary and the Regular Army has continued to this time, there being approximately 3,000 troops in the field in the provisional district. I desire to call attention to the fact that to maintain this force there the rest of the first and the fourth districts have been so depleted of officers that it is with great difficulty that conditions in these sections are kept comparatively satisfactory.

In the first district there are 14 stations commanded by native inspectors and 8 commanded by noncommissioned officers. This will do temporarily, but should not be continued for any length of time for fear of a repetition of the San Francisco de Malabon affair. I therefore urgently request that as soon as possible officers be equitably distributed in the district.

In Batañ the band of ladrones, consisting of about 20 men and 11 guns, under Mendegoring, were deprived of their leader by the outlaws themselves murdering Mendegoring. A Cavite outlaw by name of Felix Encarnación then became leader, with 22 men and 18 guns, with a man by name of Gonzales, from the town of Morong, Batañ, as second in command. Upon investigation it was ascertained that this band was composed almost entirely of natives from different towns of Batañ who had taken to the hills for various reasons. Some had been illtreated by municipal authorities; others for small violations of the laws or town ordinances; 1 was an escaped murderer from Cavite, and

2 were deserters from Governor Tecson's volunteers. The Twenty-third Company of Scouts, under Lieutenant Costello, struck this band and killed the sentinel on guard in April. Lieutenant Costello receiving a severe wound by the man whom he killed. An additional company of scouts was placed in the province. The marines, while on practice marches, guarded the Zambales-Bataán line, and Captain Rivers took general charge of operations. Fortunately Captain Bruin, early in May, with a detachment of constabulary, struck the band and killed Encarnación. The band scattered and one by one came in and surrendered their guns and were released under surveillance. The two deserters left the province, and the murderer, Pedro Manalaysay,, alias Patpat, is awaiting trial.

Conditions in the province are peaceful. The Negritos have returned to the hills from which they were driven by the outlaws, and people are pursuing peacefully their vocations. Two companies of scouts are, however, stationed on the south coast, and, they, with the constabulary, are patrolling the coast to prevent outlaws from escaping from Cavite into the province. It is to be hoped that this condition will continue there.

In Bulacán there is a band with 7 guns under Villafuerte. They inhabit the mountain districts, are protected by the barrio people, but commit no depredations. Lieutenant Burrous from Norzagaray struck this band two months ago and killed 1, wounded 1, and captured 1 revolver. Tecson's volunteers struck them again in a sitio of Ildefonso a few days ago, killed 1, captured 3, and captured 4 arms. There is no doubt but this band could have been exterminated long ago were it not for the assistance given them by the people.

Sakay's band of 7 guns, which inhabit the mountains of Rizal, have recently been pushed so hard that refuge has been taken in the mountains back of Norzagaray. The Nineteenth Company of Scouts, and volunteers, are now searching for this band.

Carabao stealing continues in this province. I dwelt on this subject in my last annual report. The animals are stolen in other provinces and sold in Bulacán, Rizal, and Pampanga, and some reach Manila. We have just unearthed a most complete scheme for stealing, falsifying documents, and selling. It is hoped that our efforts may bear fruit, and give us such knowledge that we may do more toward breaking up this traffic.

Nueva Écija is about in the same condition as when last annual report was rendered, except that we have succeeded in sending about 20 of Salvador's followers to Bilibid, and now have in custody 2 of the leaders and about 8 of his men, and 5 of their arms have also been captured. This band combines the qualities of religious fanaticism and outlawry. The depredations are confined mostly to carabao stealing. We are in a fair way to bring more of this band in in the near future. The information division has an efficient American on duty in the province now, and I am becoming more convinced day by day that in future we must depend more for results on good secret-service work than by force of arms. Last September a branch of this division was in operation there, but in the efforts of its members to extract information from prisoners maltreatment was resorted to by tying the prisoners up.

Out of 15 prisoners tried, 13 were sent to Bilibid for from ten to twenty years, but every member of the information division was dismissed and the matter allowed to drop temporarily, as disturbances in other parts left no time to continue the investigation. It has, however, now been taken up and the papers are in the hands of the attorney-general to determine whether the members can be prosecuted successfully. So much wholesale lying was indulged in that it is difficult to ascertain the real culprits, and the wrong ones are liable to be sent to prison.

As an illustration of the clever work of operators in carabao stealing as carried on in this section, I will outline a recent case: About two weeks ago I arrived at San Miguel de Mayumo, in Bulacán, and found there three men in jail who, it was claimed, had just sold two stolen carabaos. I took one of these to my room and induced him to confide in me all that he knew of the case.

He stated that about six weeks previous a man whom he did not know came to his house in Zaragoza and stayed overnight with him and asked him if he did not want to go with him up north to buy carabaos. He replied, 'No, that he was working.' "In about three weeks he returned to my house with two carabaos and engaged me to take them through the provinces and sell them, giving me the documents pertaining to the carabaos. I passed through the various towns of Pampanga and Bulacán until I arrived at San Miguel de

Mayumo in Bulacán, where I found a man by the name of Antonio Fernando who desired to buy the animals. When I showed him the documents, he said they had no stamps on them, that I must have them corrected. I then took these documents to García, the man for whom I was working at Gapan in Nueva Ecija, and he kept them from Thursday until Saturday and returned them to me; not the same documents, but others made out in favor of Antonio Fernando. García's wife returned to San Miguel de Mayumo with me, and when I presented the documents to Antonio he paid me ₱321 for the two carabaos. García had promised me that he would divide the profits with me all over ₱220 that I could get for the animals. García's wife took all the money from me except ₱4, telling me that they would make the division of the money when I returned to Gapan. While buying a railroad ticket to return there I, with my two companions, was arrested. The woman with the money left on the train."

I found that the municipal authorities were simply preparing charges against this prisoner and his two companions, and that these charges were being sworn to by Antonio Fernando, who knew perfectly well that the carabaos were stolen when he bought them. I had him placed in jail on a warrant, and then proceeded to Gapan to arrest García and his wife. They had disappeared, and from indications of the house very hurriedly. An old woman in the house stated that they had gone to Manila, but later said they had gone to Allaga. We called there and had the man arrested upon his arrival. The woman was arrested about a week later in another part of the province. García then implicated a man in Santa Rosa, from whom he said he had gotten the blanks, and that a Chino-mestizo in Manila kept these blanks for sale at ₱15 each. The man in Santa Rosa was arrested and brought to Manila to identify the mestizo. He, in turn, had gotten wind of the affair and was not to be found. Later we found him in Pangasinán Province. The documents which were presented with these stolen carabaos were complete in every particular. One purported to have been made out in Manaoag, Pangasinán, and the other at Camiling, Tárlac, and purported that the transaction had taken place at Camiling, Tárlac. The seals were perfect. Those of the municipality of Camiling, province of Tárlac, being made by a dry seal, such as is used in government offices in Manila. Part of this paraphernalia was found in the hands of the Chino, part in the hands of García, and part with the man in Santa Rosa. In order to make these transactions complete, all had to have a hand in it. The forgeries of signatures were perfect. It will thus be seen that a casual examination of a document in the hands of the owner of a carabao would not be detected as a fraud except by comparison with the municipalities in the province where it was purported to be made. In order to eradicate this method of false registration and fraudulent documents there is a world of work to be performed, which will require patience and perseverance. The municipal authorities can not be depended upon to do this, and some radical measures will have to be adopted to stop this illegal traffic in carabaos in the islands.

The senior inspector in this province, Captain Parsons, is sick with chronic gastritis, which materially interferes with his work and which, I fear, will eventually require him to go on leave.

Lieutenant Imboden is sick with malarial fever and another chronic disease, and should be relieved.

This leaves one subinspector, commanding detachment at Allaga, and one American officer, commanding detachment at San José, both isolated stations. It will thus be seen that this province, which has important work in progress, is in a bad way for officers.

In Nueva Vizcaya conditions until recently were about as when I reported last year.

Recently the Igorrotes have given some trouble by taking heads—some six or eight murders have been committed. This is nothing more than a periodical diversion, which will be indulged in no doubt for some years and until civilization can be extended among them.

The enlisted strength of that province is 175. This should not be decreased if it is proposed to push our posts gradually among the uncivilized tribes. This work has proven very beneficial and should not be abandoned. I do not know how it can be made progressive, except through the constabulary.

In order to provide Batangas with a strong man as senior inspector, Captain Thompson was relieved from duty in Nueva Vizcaya and Major Orwig assigned there. I do not regard him by any means equal to Captain Thompson for this work, but the change was a necessity.

In time a line of posts should be extended to connect with those of Lepanto-Bontoc and Isabela.

There are no organized ladrones in this province, and but few depredations.

Pampanga is in good shape. No organized bodies of outlaws. Some carabao stealing, and occasionally the Santa Iglesia disturbers give some trouble there, but as a whole I am able to report the province in pretty good shape, and I see no occasion for anxiety there.

In Pangasinán the natives of the province are a law-abiding people, not disposed to give trouble if let alone, but there is a large floating population and many people of other tribes living there. Many of the latter have given trouble elsewhere.

Captain Rickards, the senior inspector, has lived for upward of thirty years in the province, speaks several dialects, knows the province and its inhabitants as no one else could learn them in years. This fact has enabled us to hold the disturbing element in check.

This province seems to be the rendezvous of disturbers who want to organize secret societies, and we scarcely get one broken up until another is started. We have had the guardia de honor, various classes of Katipunan organizations, sedition, and efforts at organization for insurrection, but have managed to hold them in check, and the province in consequence has furnished its quota to swell the population of Bilbid.

Recently a number of murders and robberies have been committed; mostly Chinese merchants and traders have been the victims. Fortunately the culprits have been captured in almost every instance. Add to this a large amount of carabao stealing, and we have conditions as they exist.

I am convinced that municipal officials could prevent much of the lawlessness in the province. Of one thing we can boast, so far as known there is no organized band of outlaws in the province. The robberies are committed by individuals, an aggregation of local talent in each case.

In Tárlac there are no armed bands of outlaws, but some carabao stealing. Conditions are good. Recently one Atallo Tolentino, a cook in a boarding house in Manila, went to Camiling in that province and started in to organize the "army of independence," enlisting some 20 or 40 of the most miserable specimens that could be found in the islands. His career was cut short by some one notifying the constabulary, which resulted in the capture of the entire organization. The leader claimed that he was acting under orders from Manila. I will speak later of this phase of conditions.

In Zambales we have a repetition of the craze for secret organizations mentioned in Pangasinán. In March I investigated a Katipunan organization there, which resulted in sending several of its members from there and Manila to Bilbid, the last catch being one Simeon Basa, one of the principals, who could not be identified until recently. When finally caught, he turned out to be an expert draftsman working for the government in the department of engineering.

The senior inspector, a few days ago, notified me of another similar organization which has been unearthed there, and states that he now has the members in jail.

Except these seditious organizations, conditions are good in the province. There are no organized bands of outlaws there, and but little carabao stealing.

Taken as a whole, the district is in pretty fair shape. From many indications I am convinced that there is an undercurrent of agitation going on, which has its origin in Manila, and its "victims" among the ignorant class of natives in the provinces who are stirred up by envoys generally sent from Manila, some of whom are too shrewd to be detected, and others who blunder into the clutches of the authorities.

In following up these matters we generally trace them to Manila and to persons of some shrewdness and education and there lose a link in the chain which connects the work of this organization in different provinces, if such connection exists.

SUBDIVISION OF INFORMATION, PHILIPPINES CONSTABULARY.

With the transfer of certain provinces of the first district to the provisional district, the subdivision of information pertaining to the first district has confined its operations to the provisional district. Colonel Baker will cover in his report the work of this subdivision of information from January 31.

During the year prior to that time this subdivision made 101 arrests, securing

41 convictions; recovered 16 stolen carabaos, 5 stolen horses; captured 1 bamboo cannon, 10 revolvers, 3 rifles, 1 shotgun, 4 daggers, 1 bolo, and 1 saber.

It was partly through misunderstanding between this division and the commander of troops at San Francisco de Malabón, under the senior inspector of the province, that lack of responsibility on the part of two native inspectors resulted in the attack on San Francisco de Malabón and the deplorable results of that attack, the junior native inspector claiming that the senior was in command, while the senior maintained that he belonged to the information division and was not in command of the station. The result was that no proper precautions were taken to protect the stations against an attack by ladrones.

CLOTHING.

Under present conditions the clothing allowance seems to be ample. However, where there is a great deal of field work, it is not sufficient if men are to be kept neatly dressed and present at all times a soldierly appearance. As there will probably be less field work in future, it is believed that the present allowance will suffice.

There was considerable complaint until recently of the shoe, but the quartermaster is now furnishing a good quality of shoe which is giving entire satisfaction.

The matter of smart clothing on a Filipino is one which makes him take much more pride in his occupation as a soldier, and we should bear in mind at all times that the clothing allowance should guarantee this.

SUBSISTENCE.

The method of subsisting enlisted men is the same as was in vogue when I made my last annual report. The allowance has proved ample, except when a great amount of field work is necessary, in which case sometimes it has been found difficult to make ends meet. In provinces which are quiet and where little field work is required and where men can always be provided with food while in the field, considerable savings have been made. These savings have been used for supplying the men with additional clothing where necessary, with comforts about their sleeping quarters, kitchen, and dining room, and in a number of cases for the purchase of athletic goods for amusement of the men. Some provinces have quite a saving on hand unexpended.

The instructions of the first district authorize the senior inspectors to expend not to exceed half the savings on hand for comforts of the men about their barracks and quarters. Any expenditure beyond this requires the approval of the district commander.

Senior inspectors and detachment commanders are purchasing much more from the local markets than formerly. This applies particularly to rice. In some cases the savings have been utilized in buying rice while cheap and storing it, replacing the money thus taken from the savings from subsistence money furnished for the succeeding months' supplies. The method is flexible, and by contrast with the method by which scouts are rationed shows that we are on the right track in this matter.

Officers have improved since last annual report in handling the matter of subsistence, and in consequence the system is working satisfactorily. Native officers, however, in many cases fail to keep proper accounts and render proper returns, but they too have improved materially during the last year.

It would be well if scout companies on duty with the civil government could have a system for rationing somewhat similar to that adopted by the constabulary. A scout organization, after being away from its station for three or four days, must return for supplies, or otherwise a large expenditure of money is necessary to hire cargadores to carry rations. If an arrangement could be made by which the company commander was furnished half money and half rations in kind the method would be beneficial.

TRANSPORTATION.

Transportation facilities have been much improved during the year.

In a number of provinces we have mules and light wagons, and in others row-boats for delivery of supplies. These facilities have made the question of transportation much more economical.

BARRACKS AND QUARTERS.

An effort has been made during the year to economize by centralizing barracks, quarters, and offices as much as possible.

But few public buildings are occupied by constabulary in the district, and the rent of houses for barracks and quarters is quite a draft on the appropriation. Steps should be taken looking to the construction of both barracks and quarters at points where it is an established fact that for a long period troops will be stationed.

SCHOOLS.

On November 21, 1903, General Orders, No. 82, were issued, outlining a course of instructions for enlisted men. This order was later amended on June 16, 1904, by General Orders, No. 75.

During the forepart of the fiscal year instructions contained in the above-mentioned orders were carried out at all stations in the first district, as far as practicable, and at several stations considerable progress was made.

But, generally speaking, progress has been limited, owing to the depletion of the enlisted force by operations in Samar and the provisional district, which required the detaching for detached service in those disturbed provinces of every officer and enlisted man who could be spared from stations in the first district, leaving only sufficient officers and men to maintain order, for the necessary guards, guarding of provincial jails, patrolling, etc., requiring all their time and energy, leaving practically no time for instruction in school work.

The withdrawal of officers from the district for duty in the disturbed provinces left only the senior inspector, supply officer, with an additional American officer in some of the provinces, consequently the work of instructing enlisted men fell to the native officers and noncommissioned officers in command of stations, many of whom were in need of similar instructions themselves.

Nevertheless such soldiers as could be spared from duty have attended night schools, taught by American teachers, where such were stationed. At places where detachments have been stationed, and there were no American teachers, the officer or noncommissioned officer in command of the detachment has devoted such time as was available in drilling and instructing the men in constabulary regulations and their immediate duties, so far as was practicable with the number of men that could be spared from duty for this purpose.

Since November 19, 1904, there have been few stations in the district that could at any time muster half a dozen men off duty, which was not a sufficient number for any formation for drill.

With the return of the officers and various detachments to their respective provinces in the district, it is intended, conditions permitting, to require officers to devote more time in studying up their duties, as outlined in General Orders, No. 66, current series, headquarters Philippines Constabulary, and in instructing enlisted men in their duties as required by general orders.

With the contemplated reduction in the force of the enlisted men, stations now garrisoned will, with the exception of a very few, have to be garrisoned by constabulary detachments of but few men more than are now garrisoning such towns. Patrolling in the district will have to be kept up as heretofore, which will keep almost every available man continually on the move, but a certain course of instruction must be given enlisted men, no matter how small the detachments, in order that they may properly perform the large scope of work that lies before them. It is believed that this end may be more rapidly attained by requiring them to first acquire at least some knowledge of reading and writing. Only about 50 per cent of the enlisted force of the constabulary can read or write understandingly at the present time, and as long as this condition of affairs remains it will be impossible for these men to learn satisfactorily any course of instruction. In view of this, it is believed that every enlisted man should be required to attend night school at such towns, garrisoned, in which a night school is run, and at others, that the officers be required to teach the men to read and write first of all, in addition to such practical instructions as may be possible with reference to their immediate duties as constabulary and peace officers. Not until the enlisted men have acquired a fair knowledge of reading and writing can the course of theoretical instructions be pursued by them to advantage.

APPENDIX TO SCHOOL REPORT.

Number of men in each province who read, speak, and write in the various languages, and the percentage in the native dialects.

Province.	Strength of province.	Spanish.			English.			Read, write, and speak native dialects.
		Read.	Speak.	Write.	Read.	Speak.	Write.	
								<i>Per cent.</i>
Bataán	94	72	37	17	4	4	4	65
Batangas	188	30	30	30	4	4	4	95
Bulacán	118	29	29	29	11	11	11	80
Cavite	244	36	44	36	6	11	2	53
Laguna	136	20	20	8	7	7	2	33
Nueva Ecija	155	8	3	3				90
Nueva Vizcaya	182	27	27	27	8	8	8	60
Pampanga	128	5	10	3	3	11	2	60
Pangasinán	210	83	97	68	8	12	8	75
Rizal	201	34	34	34	9	9	9	70
Tárlac	111	24	20	6				42
Zambales	145	48	55	24	4	4	4	44

Figures in the above table do not mean that this number of enlisted men understand these languages sufficiently to intelligently read and execute an order, but have a limited knowledge of the language. Men who learn English get better positions and do not continue in the service. Those above reported will in time do the same.

MEDICAL DIVISION.

In the first district we have small hospitals established at Tárlac and Nueva Vizcaya. Work accomplished at both places has been beneficial and very satisfactory. Whether or not these hospitals should be extended to other provinces depends upon the policy of the government as to how the medical division should be extended for the constabulary and the amount of money which is appropriated for the same.

In all provinces we have one or more hospital corps men who have been taught to administer simple medicines for minor diseases. This has proven beneficial. The health of the men throughout the district has been good among enlisted men. Quite a number of officers are needing a change from long and arduous service in the islands.

A supply of medicines is kept at most stations in the district, and in many cases these have not been as beneficial as was expected, from the fact that if a local doctor or president of the board of health is called upon to prescribe he simply writes a prescription, which must be taken to a drug store to be filled. These medical men, claiming that they are doctors and not apothecaries, will not compile the prescription from medicines on hand. Steps should be taken to compel them to do so.

The establishment of the hospital at Nueva Vizcaya has been of great benefit, as prior to that time there was much complaint that in that isolated country there were no facilities for either constabulary or other civil government employees to receive proper attention when sick.

It is believed that by a judicious combination the work of the board of health and the medical work of the constabulary can be combined in the provinces with economy and benefit to the government.

TELEGRAPH DIVISION.

The work of this division has been considerably extended during the year. Some lines have been taken over from the Army, considerable construction and repair accomplished, and lines extended.

A large majority of the stations in the district are now connected by wire, and from district headquarters one is in direct communication with stations in Cavite, Batangas, Rizal, Laguna, and Bulacán by telephone, and with most others by telegraph. This facilitates the work of communication materially and enables us at many times to intercept outlaws and other criminals where it would be impossible were not these lines in operation.

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 61

There are serving in the district now 8 telegraph inspectors, 13 American operators, 12 American linemen, 9 native linemen, and 25 native telegraph operators.

Native telegraph operators are doing fairly good work and continually improving. It is believed that in time they will be able to handle all but the more important stations.

TARGET PRACTICE.

There has been a limited amount of target practice in the district during the year. The Filipino is but a poor marksman and the improvement is not material, still by the use of sighting and aiming drill it is believed that we can materially improve him in this respect in time.

TORTURE OF VICTIMS.

There have been fewer cases of inhuman treatment and torture of victims by outlaws during the past year than formerly. Still many people are badly treated by them where they have given information or aid to the authorities when pursuing them.

There have been a few cases where constabulary soldiers have mistreated natives after arresting them, but nearly all complaints have proven to be false. I believe that in all cases where it could be shown that natives have been made the victims of mistreatment by constabulary that the latter have been properly punished.

The local newspapers have made a great point of the maltreatment of natives by constabulary. Most of these communications are false, and the object is more far-reaching than would appear by reading the paper, it being my belief that this method was instituted purely for the purpose of trying to turn the tao against the American Government.

RELIGIOUS QUESTION.

There does not seem to be as much agitation now as there was last year between the Aglipayano and Romanist churches, still in certain localities there is a very bitter feeling between the people of the two religious factions:

The Aglipay Church is not receiving converts as fast as it did last year, but from what I can learn there is a gradual growth in membership. It is true that this church has gathered into its folds the restless and disturbing element. Whether or not this will ever prove a misfortune to us remains to be seen. It was claimed at one time that this was not a religious organization, but the groundwork for a revolution. I believe that that theory has been entirely exploded.

Señor Aglipay seems now to be interesting himself more in procuring the church property through the courts in certain localities than formerly, and is confident that in certain sections he will succeed. It is a matter, I presume, that must be entirely settled by the courts.

MUNICIPAL POLICE.

Report of the municipal police for the provisional district from February 1 to June 30 will be embraced in Colonel Baker's report of that district.

There has been some little improvement in the efficiency, dress, and qualifications of the municipal police throughout the district in some sections; in others, it was as bad as could be, and I can not say that it has grown worse. In many places the policemen continue to be muchachos and messengers for the presidente, are irresponsible, and of no value to the civil government in keeping the peace. In a few towns they have accomplished fairly good work.

In the first district, including the provisional district, there are 126 towns, having a total of 1,785 armed policemen, provided with the following arms: Rifles, 601; revolvers, 494; shotguns, 485. Total arms, 1,580.

It will thus be seen that the municipal police of the district have very nearly as many arms in their hands as the constabulary, still the work accomplished is so little that the comparison seems odious.

It is believed that the municipal police, under proper training and instructions, could be made of material assistance to the constabulary in its work throughout the provinces, but at present it is of but little value.

Arms lost by the municipal police: Eighteen shotguns, 1 revolver, 20 rifles, and 350 rounds of ammunition.

Captured: Nine rifles, 41 shotguns, 16 revolvers, and 58 rounds of ammunition. Work accomplished: Engagements, 16; outlaws killed, 8; outlaws claimed to be wounded, 23; outlaws captured, 77. Balancing accounts shows the municipal police: Nine rifles to the credit of the ladrones, 21 shotguns to the credit of the police, and 15 revolvers to the credit of the police—a pretty poor showing for the work of upward of 1,000 policemen.

The results accomplished by police hardly warrant keeping as many rifles in their hands as they now have. It is believed that they should be largely substituted by shotguns and revolvers, and in some places all arms taken from them.

In Rizal Province there are no armed policemen, and there are fewer depredations committed than in any other province, and it is almost entirely free from ladrones.

STUDY OF NATIVE DIALECTS.

Quite a number of officers in the district have qualified in one of the native dialects during the year, and thereby received additional compensation in the way of increased pay. Officers when first joining the constabulary should be encouraged to take up this work, as it is well known that after a long residence in this country but few people will exert themselves mentally in this respect.

ANIMAL STEALING AND FALSE REGISTRATION.

In certain sections of the district organized carabao stealing is in vogue, and I regret to state that in some instances municipal officials have actively aided in this "enterprise," while others have not taken such steps to prevent it as lay in their power.

The laws are defective and should be amended.

They should take the recording of transfers out of the hands entirely of municipal officials and place them in the hands of provincial officials. If these officials are too pressed with official duties to give this matter proper attention, then an American should be specially employed for this purpose in each province. He must be honest, conservative, and above "graft."

The provincial pound should be in the hands of the senior inspector of constabulary, and the matter of pounding entirely removed from the municipal treasurers and presidents.

The people who lose carabaos should be encouraged to come to the constabulary to report the loss of an animal. As matters now stand they do it only in certain localities.

Municipal officials have used the "tao" to a finish by either charging him an exorbitant price for the keep of the animal, only a part of which reaches its proper destination, or the animal is improperly advertised and sold without the owner knowing that his animal has been found. These animals are bought in at a low price by officials or their friends and a clear title procured. When stolen animals are placed in the hands of municipal officials it is to their interests that the owner be not found prior to sale of the animal.

Again, the law does not require a carabao to be branded until it is 2 years old. The tao interprets this to mean that the animal must not be branded until it is 2 years old. The calf should be branded at six months. Many animals are stolen before being branded, and there is absolutely no way to have it identified, particularly when it has been driven to another province.

We have recently tried to take hold of this matter systematically in Nueva Ecija Province. Last reports, after one month's work, state that "we now have 198 false documents, some 20 stolen carabaos, and a number of prisoners on hand, and the work has hardly begun."

As there is considerable stealing of animals throughout the islands and an alarming amount of it in certain provinces, the amount of work and patience required to clean it up is appalling.

The falsification of documents at present is "dead easy." Blanks can be printed anywhere in Manila, exact duplicates of those used by the government. Similarly, municipal and provincial seals can be and have been counterfeited. It then only remains for the document to be filled out properly and stamped. If suspicion rests on any carabao or the holder of its document, an examination of it proves nothing. The transfer may purport to have taken place in another province. The record must then be compared with the municipal treasurer's books of that town. When we realize that the majority of the documents in existence would have to be compared to ascertain which are genuine, it will be seen that the work is enormous.

Again, any thief can get three friends to come forward and certify that he is the legitimate owner of a carabao, and as the municipal treasurer is not particular as to who makes the certificate we again run against a bad proposition.

To-day there are many well-to-do people in possession of stolen carabaos, bought at low prices; some of the purchasers believing that the purchase was legitimate, and others not caring.

There are at this time but very few legitimate sales of carabaos.

People who can afford to own carabaos can make far more money by renting them out than by selling.

About the only legitimate transactions are where the owners are hard up for money and are compelled to sell.

Here are some of the essential features of a proper law to prevent illegal traffic in carabaos:

Require the animal to be branded with municipal, provincial, and owner's brand.

Require every owner's brand to be recorded in the office of the provincial treasurer, and copy furnished to senior inspector.

Require calves to be branded and registered at provincial treasurer's office before they are 1 year of age.

Provide a special paper which can not be counterfeited for certificate of ownership, with stub. Have them in book form and numbered. As to books and pages no two numbers the same. The insular treasurer to issue these to provincial treasurers.

Require provincial treasurers or a deputy to issue all certificates. In case of transfer the provincial treasurer or supervisor to witness and sign in person, on specified days in the week or month.

Make the senior inspector of the province the poundkeeper, and encourage the people to report losses at once to the constabulary.

After advertising a stolen animal in every municipality of the province and adjacent provinces, senior inspector to turn the animal over to supervisor or treasurer for sale, sales to be on a specified day of the month, if any animals for sale, say the last Saturday morning from 10 to 12.

If owner presents himself and proves ownership of an animal, the senior inspector to collect from him expense for keep of animal at not to exceed — centavos per day; he to keep an accurate account of expenses and collections, any surplus to be turned over to provincial treasurer on 30th of June. If animal sold, senior inspector to receive not to exceed — centavos per day of proceeds of sale for expense for the number of days animal was in possession of constabulary, remaining proceeds of sale to go into treasury of province.

If owner of animal turns up within a certain specified time after sale, to recover animal by paying expenses, etc.

Make the traffic in carabaos, except as specified, a severe crime to both seller and purchaser.

Require all carabaos to be registered and certificates of ownership furnished on the special paper, the deputy to visit municipalities for exchanging certificates of ownership to special paper, notifying people through the presidentes when they will arrive and length of stay. These deputies should be Americans and honest. A thief would graft. Witnesses of ownership where any question, should be those whose word can be trusted. I am not prepared to recommend on this point at this time for either original registry or exchange of certificate.

Many stolen animals are shipped on the railroad to Manila or other points along the line. The law should provide for a proper inspection of documents prior to shipment.

Carabaos are stolen in certain localities, driven into the mountains and retained or ransomed, as in Iloilo Province. A few are stolen and eaten by hungry people, but the great bulk of stealing is done for the purpose of selling. False documents are generally, but not always, prepared for the purpose. This method is used in many provinces of Luzón and to an extent that but few people realize.

The knowledge of the loss of a carabao seldom gets beyond the officials of the municipality, and in many cases these officials make no effort either to assist in the recovery or to catch or punish the thief.

The above method is carried on to a large extent in Pangasinán, Nueva Écija, Tárlac, Pampanga, and Bulacán.

It is claimed that many of these stolen animals reach Manila and are never recovered. Recently the senior inspector of Pampanga spent several weeks in the field investigating these methods. Carabao thieves in Nueva Écija

claimed that the people of Pangasinán and Tárlac stole all their carabaos during the insurrection, and that they are now evening up scores.

The law should require the owner of a carabao to turn in his document of a dead animal to the provincial treasurer to be destroyed. Many of these documents are on hand and can be easily made to fit a live stolen carabao.

Owners of carabaos are at a continual expense to prevent their animals from being stolen. They do not dare to allow them to graze at night. They will welcome any law or moderate tax that will insure them against the loss of their animals. Our laws should be such that a stolen carabao can not be sold. When this is accomplished the traffic will stop.

We recently captured a carabao thief at Gapan, in Nueva Écija, living in comparative comfort, who served three terms for this crime during the Spanish régime in the islands. He had the matter of falsification of documents down to a science.

The law as it now stands is a very excellent one, if we assume that municipal officials are honest. So many of them are not in matters connected with animal stealing that the law covering registration, transfer, branding, etc., should be entirely taken from them and placed under immediate control of provincial officials.

I have dwelt at length on this subject, as I regard it as the greatest evil in the district to-day.

PERSONNEL OF CONSTABULARY OFFICERS AND PAY.

Time and experience have shown that the duties required of a constabulary officer are varied. There was a period when if he could handle his men and shoot not much more was required of him, but now it is necessary that he be a man with sufficient education, honesty of purpose, and spirit to assist as an American in influencing the officials and inhabitants of the provinces to become good citizens and law abiding. Far more varied and delicate duties are required of him than of an army officer serving with troops in the islands at the present time.

There is some material in the constabulary which is unsuited for this work, and the time has arrived when it should be gotten rid of and replaced by men of high moral standard and some education. Such men are not cheap and must be paid sufficient to guarantee their remaining with the constabulary for a long period. It is to be hoped that the finances of the islands will warrant the Commission in making such provision in the way of pay to induce this class of men to join the constabulary and, furthermore, that after having joined it they will not resign for the purpose of accepting more lucrative positions in other branches of the government or in civil life.

SCOUTS.

During the first part of the year there were 18 companies of Philippine Scouts on duty with the civil government in the first district. Later the First and Fifth Companies were sent to Sámar. After establishment of the provisional district, consisting of Cavite, Batangas, Rizal, and Laguna, fourteen of these companies were continued on duty in that district and two in the first district proper.

In April, when field operations were taken up against the ladrone band in Bataán, two companies, the Eleventh, from Nasugbú, Batangas, and the Twenty-third from Montalban, Rizal, were transferred to Bataán. Both these companies have been kept on duty in Bataán patrolling and assisted in breaking up and causing the surrender of that band. Lieutenant Costello surprised this band and killed one of its members, he receiving a severe wound in the engagement from which he has not yet entirely recovered. The Twenty-third Company succeeded in surprising the band, capturing one or two arms, and killing one of its members. These two companies are still in Bataán with specified work of patrolling designated, which is being carried out to prevent ladrones from crossing to that province from Cavite.

The Ninth Company during the year has had its headquarters at Cabanatuan, Nueva Écija, with detachments at San Isidro and Peñaranda. These detachments have been occupied with the usual patrolling of those districts. However, results accomplished have not amounted to much other than keeping outlaws from committing depredations.

The Nineteenth Company was changed from Blián in Laguna Province to Polo, Bulacán, with detachments at Meycauayan and Santa María. These detachments are kept patrolling that section and frequently are sent into the

mountains, together with constabulary, in an effort to capture or kill Sakay, the leader of a small band of ladrones which inhabit the mountains along the Lanating River.

Colonel Baker's report will embrace the details of work accomplished by the companies operating in the provisional district.

Of the four companies now in the first district proper the following is a summary of work accomplished:

Eleventh Company:

Patrols	175
Miles covered	2, 088
Outlaws captured	6
Revolvers captured	1
Rounds of ammunition captured	204

Ninth Company:

Patrols	116
Miles covered	1, 098

Nineteenth Company:

Patrols	40
Miles covered	612
Outlaws killed	1
Rifles captured	1

Twenty-third Company:

Patrols	201
Miles covered	2, 743
Outlaws killed	2
Rifles captured	2
Revolvers captured	1
Rounds ammunition captured	57

Total work accomplished by scouts serving in first district and provisional district for year:

Shotguns captured	2
Revolvers captured	23
Rifles captured	34
Rounds ammunition recovered	1, 603
Stolen horses recovered	8
Stolen carabaos recovered	9
Outlaws surrendered	17
Number of patrols	1, 838
Miles covered	27, 251
Outlaws killed	34
Outlaws wounded	16
Outlaws captured	74

In connection with this report on scouts, I desire to state that generally these officers have not a proper conception of their duties as regards peace officers and political officers. They are too much disposed to confine themselves to patrolling and searching for outlaws.

There should be general instructions issued for all scout officers on duty with the civil government covering the features of their relations with provincial and municipal officials, that they should exert themselves to keep closely in touch with these the same as constabulary officers are supposed to do, that their work should not be confined to trying to run down outlaws, but that they should make an effort in the locality where they live to keep in touch with political conditions, matters pertaining to courts, arrests, and presentation of cases before justices of the peace, and generally that they are on the same status as regards these matters as constabulary officers. I believe that the effect will be very beneficial and will enlarge their scope of usefulness.

Last year every effort was made to have the scouts organized into battalions and captains of the line appointed and assigned to duty as commanding these battalions, it being the intention that they would be assigned a certain district and have general charge of all matters pertaining thereto in keeping the peace. Unfortunately when these appointments and assignments were made the scout majors were kept on duty purely as military officers, with no authority to act in civil government matters, but simply with instructions to confer with and work in harmony with the chief and assistant chiefs of constabulary. The result has been, and a most natural one, that scout majors have exerted them-

selves in trying to have their battallions assembled for the purpose of drill, instruction, and target practice, losing sight of the fact that the primary work of the companies should be keeping the peace. We have the anomalous position of company commanders being under the orders of the chief and assistant chiefs of constabulary, while the majors are purely under the orders of the division and department commanders.

There is no doubt that far more effective work will be accomplished by assigning these scout majors to duty with the civil government, and thereby giving them the double duty of keeping the peace and at the same time keeping the companies of their battallions in proper training and discipline. For example: A scout major operating in Cavite Province should have the companies of his battallion distributed through a certain part of that province and the officer instructed to take a general supervision, both from a military standpoint and civil government standpoint, of all conditions within a certain scope.

He will thus become interested in both features of the work. His companies will be trained to civil government work and also in military tactics, resulting in organizations far more useful for the purpose for which the scouts were organized. I believe that it was the intention of the Secretary of War that this arrangement should be made.

Appended hereto is a record of the principal events during the year; also tabulated data pertaining to the district which are self-explanatory.

Very respectfully,

W. S. SCOTT,
Assistant Chief, Philippines Constabulary.
Commanding First District.

THE ADJUTANT-GENERAL, PHILIPPINES CONSTABULARY.

Since rendering the above report the constabulary officers in Nueva Ecija have discovered that blanks similar to the one inclosed are being used for the purpose of obtaining registration and certificates of ownership of cattle in that province before expiration of the law the 30th of September prescribing how this shall be done.

These blanks are filled out and dated anywhere from eight to twelve years ago, inserting the names of municipal officials of any convenient province for which the blank used may pertain by the government stamp thereon.

Municipal treasurers, I am informed, do not take and in many cases can not take the necessary steps to ascertain who the municipal officials of some town in some distant province were so many years ago, and assuming that the certificate of ownership is correct, issue new documents.

It is almost impossible to legally prevent unauthorized persons from obtaining certificates of ownership and registration where such blanks as the inclosed are used.

Work accomplished by the Philippines constabulary, first district, during the fiscal year ending June 30, 1905.

[Work accomplished in the provinces of Batangas, Cavite, Laguna, and Rizal, from February 1 to June 30, 1905, not included in tabulation. This will be included in commanding officer's report for the provisional district.]

Provinces.	Expeditions and patrols.	Miles covered by patrols and expeditions.	Engagements.	Outlaws.			Warrants received.	Warrants executed.	Arrests, exclusive of outlaws captured.	Investigations pending.	Trials and approved convictions, Act No. 619.	Amount of fines imposed under Act No. 619.	Arms lost by constabulary.		
				Killed.	Wounded.	Captured.							Carbines.	Revolvers.	Rounds of ammunition.
Bataan	76	2,575	8	6	.....	6	19	19	8	6	2	73.00	.....	.....	.....
Batangas	327	7,943	85	8	8	31	89	52	107	1	5	39.00	.....	.....	33
Bulacan	99	6,761	5	7	7	28	377	297	456	3	21	95.00	.....	.....	.....
Cavite	503	15,433	13	13	12	4	16	13	.....	.....	6	35.00	23	2	1,183
Laguna	151	3,386	.....	.....	55	9	4	45	6	12	12	77.00	.....	.....	.....
Nueva Ecija	257	12,692	3	2	4	18	70	23	11	6	4	111.00	.....	.....	.....
Nueva Vizcaya	48	1,804	3	11	3	.....	8	8	7	.....	12	24.50	1	.....	.....
Pampanga	156	1,863	.....	4	19	6	9	3	.....	.....	9	24.00	.....	.....	.....
Pangasinan	1,288	29,107	.....	65	74	47	245	4	9	.....	9	82.00	.....	.....	.....
Rizal	51	2,369	1	.....	37	32	54	1	23	.....	1	61.25	15	4	946
Tarlac	90	8,160	.....	37	47	26	17	2	.....	.....	3	9.50	.....	.....	.....
Zambales	88	8,710	2	5	14	35	33	13	7	.....	.....	.....	.....	.....	.....
Total	3,174	90,803	120	52	84	263	807	559	972	39	90	511.25	41	11	2,207

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 67

Captured, surrendered, and recovered.

[Work accomplished in the provinces of Batangas, Cavite, Laguna, and Rizal, from February 1 to June 30, 1905, not included in tabulation. This will be included in commanding officer's report for the provisional district.]

Provinces.	Car-bines.	Rifles.	Shot-guns.	Revol-vers.	Ammu-nition.	Bolos.	Horsea.	Cara-baos.
Bataan.....	1	16		4	350			3
Batangas.....				23	68		25	9
Bulacan.....		7	1	4	8	12		5
Cavite.....		2	1	5	1,021		3	2
Laguna.....		9	49	19	133	3	2	6
Nueva Ecija.....	2	4	1	5	40			9
Nueva Vizcaya.....	1							
Pampanga.....		2	3	4	56			2
Pangasinan.....	1	1		6	10			19
Rizal.....	6	27	7	10	180			5
Tarlac.....								2
Zambales.....						10		1
Total.....	11	68	56	80	1,861	32	30	68

Mortality report, Philippines constabulary.

[Work accomplished in the provinces of Batangas, Cavite, Laguna, and Rizal, from February 1 to June 30, 1905, not included in tabulation. This will be included in commanding officer's report for the provisional district.]

Province.	Officers resigned, transferred, discharged, etc.	Officers died of disease, etc.	Enlisted men.				
			Killed in action.	Died of wounds received in action.	Died of disease, etc.	Enlisted men deserted.	Wounded in action.
Bataan.....	6		2				3
Batangas.....	4	1					
Bulacan.....	7		8				
Cavite.....	6					1	3
Laguna.....	3				1		
Nueva Ecija.....	4		1	1	1	1	
Nueva Vizcaya.....	5	1				1	
Pampanga.....	5			1	1		
Pangasinan.....	4	1		1	2		
Rizal.....	4		1	1			
Tarlac.....	4						
Zambales.....	5				1		
Total.....	57	2	8	4	6	3	6

Work accomplished by the subdivision of information in Cavite and Batangas provinces.

Cases investigated.....	116
Arrests made.....	101
Complaints filed.....	58
Convictions secured.....	41
Property recovered—	
Stolen carabaos.....	18
Stolen horses.....	5
Captured—	
Bamboo guns.....	1
Revolvers.....	10
Rifles.....	3
Shotguns.....	1
Daggers.....	4
Bolos (war).....	1
Sabers.....	1
Warrants received.....	16
Warrants executed.....	16

REPORT OF THE PHILIPPINE COMMISSION.

Municipal police.

Work accomplished in provinces of Batangas, Cavite, Laguna, and Rizal, from February 1 to June 30, 1905, not included in tabulation. This will be included in commanding officer's report for the provisional district.

Province.	Arms lost.				Captured.		Recovered.	Work accomplished.				
	Shotguns.	Revolvers.	Rifles.	Ammunition.	Rifles.	Shotguns.	Revolvers.	Ammunition.	Number of en- gagements.	Number of out- laws killed.	Number of out- laws wounded.	Number of out- laws captured.
Bataan.....												
Batangas.....	15		20	50	4		6	32	6	2	3	15
Bulacan.....					1		1		5	3	10	4
Cavite.....					1		3	15	3	2	8	3
Laguna.....	3	1				1	1	6	2	1	2	50
Nueva Ecija.....												2
Nueva Vizcaya.....												
Pampanga.....							1	5				3
Pangasinan.....												
Rizal.....												
Tarlac.....												
Zambales.....												
Total.....	18	1	20	50	9	41	16	58	16	8	23	77

Work accomplished by the Philippine Scouts in the first constabulary district.

Company.	Expeditions and patrols.	Miles covered by expeditions and patrols.	Outlaws.			Rifles captured and recovered.
			Killed.	Wounded.	Captured.	
First	13	1,380	2			1
Second	23	1,428			11	1
Third	23	2,424	2	1	1	9
Fifth	14	1,523				
Sixth	14	1,523				6
Seventh	151	1,571	4	2	17	3
Eighth	35	922	4	9	3	5
Ninth	116	1,088				
Eleventh	75	2,088			6	
Thirteenth	157	1,618			3	
Sixteenth	145	2,888				
Nineteenth	40	611	1			1
Twenty-first	116	1,185				2
Twenty-second	137	1,632				1
Twenty-third	201	2,743	2			2
Twenty-fifth	102	1,979	5	2	15	1
Twenty-ninth	20	2,823	1		6	
Forty-fifth	106	400	2	2	6	2
Total	1,838	27,251	23	16	74	34

Arms and ammunition captured by the Philippine Scouts.

Company.	Shotguns captured and re- covered.	Revolvers captured and re- covered.	Rounds of ammuni- tion se- cured.	Stolen horses re- covered.	Stolen carabao recovered.	Outlaws surren- dered to company.
First.....						
Second.....		2	61			4
Third.....	1	2	300			10
Fifth.....						
Sixth.....			89			
Seventh.....		2	25		1	2
Eighth.....		1	500			
Ninth.....						
Eleventh.....		1	204			
Thirteenth.....		3	59		3	
Sixteenth.....						
Nineteenth.....						
Twenty-first.....	1					
Twenty-second.....			14			1
Twenty-third.....		1	57			
Twenty-fifth.....		6	66	6	4	
Twenty-ninth.....		3	62	2		
Forty-fifth.....		2	65		1	
Total.....	2	23	1,608	8	9	17

EXHIBIT 2.

REPORT OF THE OFFICER COMMANDING SECOND DISTRICT, PHILIPPINES
CONSTABULARY.

HEADQUARTERS SECOND DISTRICT, PHILIPPINES CONSTABULARY,

Lucena, P. I., June 30, 1905.

SIR: I have the honor to submit the following report on events and conditions, and operations of Philippine scouts, constabulary, and municipal police serving in this district during the fiscal year ending June 30, 1905, together with recommendations and remarks in this connection.

The territorial limits of the district have not changed during the past year, and consist, as formerly, of the provinces of Albay, Ambos Camarines, Masbate, Mindoro, Romblón, Sorsogón, and Tayabas, with a total aggregate population of 1,000,000 (approximated), not including the wild tribes in Mindoro, Tayabas, and Ambos Camarines.

On account of the peace and tranquillity which prevailed at the beginning of the present fiscal year, the undersigned was granted permission by the governor-general to visit the United States, and was absent from the district from July 17, 1904, to February 12, 1905, having been temporarily relieved as district commander during that period by Captain William C. Rivers, First U. S. Cavalry, Inspector-general, Philippines Constabulary.

There are at the present time serving in this district 44 officers and 1,019 men of the constabulary, 13 officers and 616 men of the Philippine Scouts, and 1,096 municipal police, making a total of 57 officers and 2,731 men.

CONDITIONS JULY 1, 1904.

With the exception of certain localities in Ambos Camarines, Albay, and Tayabas, conditions as to peace and indications of future prosperity were apparently excellent. The following is a brief résumé of conditions on the above date in the various provinces of the district:

ALBAY.

At this date there were three organized ladrone bands operating in the province of Albay, commanded respectively by Agustín Saría, Francisco Gamboa, and Dalmacio Celestial. All of these bands had committed murder, abduction, and robbery, but Saría's principal aim was to levy tribute on the people and to maintain an independent insurgent government. Conditions were in a rather disturbed state.

AMBOS CAMARINES.

At the beginning of the fiscal year practically open insurrection existed in Pasacao, San Fernando, Pamplona, Minalabo, and vicinity. This serious condition of affairs was due to the pernicious influence of one José Roldan, alias Mariano Leonesta, alias Magno Carlo, a notorious and intelligent ladrone chief, who operated through Tayabas and Ambos Camarines and who had really organized the extensive ladrone movement of the two previous years in Albay, from which province he was driven by "General" Ola, the outlaw chief, on account of having appropriated more than his share from the insurgent funds. He organized his forces in the most impoverished sections of Ambos Camarines, and had remarkable success in securing municipal officials and prominent individuals to assist him. The southeastern portion of the province was meanwhile kept in a disturbed condition by the operations of Agustín Sarfa's band. Camarines Norte and the balance of the province were peaceful and quiet.

MASBATE.

Peace and tranquillity prevailed in this province, and no outlawry or brigandage existed.

MINDORO.

At this time conditions in Mindoro were better than at any time since American occupation, this being due to the vigorous and active operations of the constabulary and scouts. Gasic had been captured and his band dispersed. One ladrone band existed, however, commanded by one Antonio Gonzales, but was inactive and had only two guns and no ammunition.

ROMBLÓN.

This small island province was and is about the most peaceful and quiet in the district, although one ladrone band had existed, commanded by Vicente Padilla. This band was completely scattered by the constabulary, 6 having been captured, 1 of whom was sentenced to be hung, 2 received life sentences, and 3 received, respectively, twenty, twelve, and six year sentences.

SORBOGÓN.

This province, formerly so disrupted by ladronism, was, at the beginning of the fiscal year, quiet and peaceful. The active operations of the constabulary, assisted by the energetic provincial officials, had brought about an enviable state of peace and tranquillity.

TAYABAS.

At the beginning of the fiscal year there were four ladrone bands operating in Tayabas Province. José Roldan, with 100 men and 30 firearms, operated in the southern part of Tayabas and in the northern part of Ambos Camarines; Claudio Jalbuena, alias Capitan Claudio, operated with a small ladrone band, with 7 firearms, in the vicinity of Tayabas, Sariaya, and Pagbilao; Nicolás Encallado, alias Capitan Colas, with a band of 15 or 20 men and 15 rifles, operated in the vicinity of Sampaloc and Mauban; and Vicente Arugay, with a small band (number of firearms not known), operated in the same neighborhood. All of the last three mentioned frequently took refuge in Laguna Province.

CONDITIONS, EVENTS, AND OPERATIONS.

Here follows, by provinces, a brief résumé of occurrences in the district during the entire year:

ALBAY.

In this large and wealthy province, so turbulent and unruly in the past, very satisfactory conditions now prevail, and it is difficult to realize that but two years ago practically open insurrection existed in Albay Province and had the warm sympathy and support of a majority of the inhabitants, whose every endeavor was exerted to impede the operations of the constabulary and scouts in their efforts to maintain law and order.

In contradistinction to conditions which then existed, the sympathy, ready support, and encouragement of the inhabitants are now accorded to the constabulary, and the government peace forces find their task proportionately less difficult.

The following is quoted from a recent report of the senior inspector of the constabulary of Albay:

"The thinking natives of this province seem to have acquired a wholesome fear of ladronism as an occupation and to have concluded that the danger of being caught and punished is out of proportion to the pleasure or profit of the business. Experience has taught that some 'ilustrado,' or educated native, of the town has always furnished the motive and brains for all ladrone movements of any importance or consequence. Several important arrests and convictions in this class during the past year have made them somewhat timid, and they are now apparently convinced that the law is impartial, fearless, and no respecter of individuals. The downfall of Saría and his band began after the conviction of a wealthy native of Tabaco for giving aid to members of Saría's band. The band of Ciriaco Sacro entered the jurisdiction of Libon one day last month and the constabulary received 42 'noticias' of the movements of this band in one day."

The outlaw bands of Agustín Saría and Francisco Gamboa, which infested the provinces of Albay and Ambos Camarines, were the principal disturbing elements in this section, although they are comparatively inactive, owing to the vigorous operations of the constabulary. Both Saría and Gamboa were killed by the constabulary in Ambos Camarines—the former on October 26, 1904, and the latter on March 21, 1905. The death of these two notorious ladrone leaders had a most salutary effect on the inhabitants of both provinces. Both bands have been scattered and disorganized, and in Albay 24 were killed and 20 captured. The only remaining band now operating in this province is that of Ciriaco Sacro, an escaped convict from the provincial jail. He is a particularly vicious character and has the murder of an entire family, as well as other crimes, against him. He has in his band about 7 men and 3 guns, but his efforts are limited to eluding the constabulary.

On March 24, 57 convicts working on the Ligao-Tabaco road in Albay Province effected their escape, taking 5 guns and 50 rounds of ammunition from the scouts who were guarding them. During the *mélee* 2 convicts were killed and 1 scout guard slightly wounded. Although this was the largest jail delivery that ever took place in this portion of the islands, its results were not at all serious. Upon receipt of the information, orders were immediately wired to all the scouts and constabulary in this district under my command to exert themselves to the utmost to promptly recapture all the escaped prisoners, and all provincial governors were requested to direct their municipal presidentes to cooperate in this work. In Albay the constabulary killed 5, captured 3, and recaptured 3 guns, while a large number of the prisoners were killed or recaptured by the people of the towns and a few by the municipal police. In the province of Ambos Camarines the constabulary recaptured 5 of the escaped prisoners, and the municipal police and volunteers 13, making a total of 18. One encouraging result of this escape was the evidence of sincere desire on the part of the people of the neighboring towns to prevent any new ladrone organization through the continued freedom of such a threatening element, and the people in both the provinces of Albay and Ambos Camarines promptly bestirred themselves and recaptured nearly all of the escaped convicts, only two being still at large.

There have been 114 convictions in the court of first instance for political and criminal offenses during the year. The total of time sentences awarded amounts to three hundred and nine years, and fines imposed give a total of ₱3,349.

AMBOS CAMARINES.

During the past year this province has been the scene of considerable constabulary activity. The conditions which prevailed at the beginning of the year were most unsatisfactory, and were primarily due to the influence of vicious and unscrupulous outlaw leaders working on the susceptibilities of the inhabitants of impoverished sections of the province.

In the court of first instance at Nueva Cáceres 94 criminal and political convictions were secured during the year, and 3 death sentences were awarded. The total of time sentences was seven hundred and ninety years, and of fines imposed, ₱714.

José Roldan, with approximately 100 men and about 30 firearms, operating in the vicinity of Pasacao; Agustín Saría, with about 40 men and 13 rifles, operating along the Albay-Camarines border; Valerio Avila, with 9 rifles (leader wounded, in hiding, and band scattered); and Captain Matías, with 6 firearms and 2 men (other members of band captured or killed by the constabulary), constituted the disturbing elements in this province at the beginning of the year.

Due to the splendid results from the vigorous operations of the constabulary under Capt. Richard H. Griffiths, the province is now exceptionally quiet and peaceful, and the sole remaining ladrone bands are those of Juan Cabayo, consisting of about 12 men with 7 firearms, operating in Ambos Camarines and Tayabas, and of Ciriaco Sacro, with a remnant of Saría's band and about 4 guns, operating along the Albay-Camarines border.

José Roldan was killed in Tayabas Province by his own men in September, 1904. Agustín Saría and Francisco Gamboa were both killed by the constabulary of Ambos Camarines and their followers killed, captured, and dispersed.

The provincial jail of Nueva Cáceres has been in charge of the constabulary since June 13, 1902. Its condition as to security and sanitation is excellent. An aggregate of 75 prisoners have been confined therein during the year; 2 have succeeded in effecting their escape, and 1 was killed in making the attempt.

MASBATE.

This small island province, including the islands of Buriás and Ticao, has continued throughout the year especially peaceful and quiet, and the duties of the constabulary have been confined to executing warrants, guarding the provincial jail, the routine guard and patrol, inspection of police, etc.

The provincial jail at Masbate was under constabulary jurisdiction from March 5, 1903, until April, 1905, when it was again turned over to the provincial authorities. Its condition is good, but it is not secure. A total of 36 prisoners have been confined therein during the year, none of whom have escaped.

Thirteen convictions have been secured in the court of first instance at Masbate during the past year, and an approximate total of time sentences amounting to eighty-one years awarded.

Considerable effort is being made to increase the agricultural products of this province, especially in the matter of hemp and copra. The eastern coast of the island of Masbate and the whole of the island of Ticao are especially adapted to the raising of hemp and the production of copra.

The gold placer and quartz deposits of this province are beginning to attract capital from the United States, and preparation for extensive gold mining has already commenced. It is claimed that the placer deposits carry from 20 cents to \$2 gold per cubic yard, while the quartz assays run as high as \$128. This mining district shows evidence of having been worked many years ago. Pottery bearing the Chinese stamp of about the sixteenth century, which has been found about the old workings, and the fact that large trees have grown on the dumps indicate that these mines had been worked from three to five hundred years ago, though the natives have no history or tradition regarding this work.

MINDORO.

Conditions in this province have been steadily improving since the capture of Gasic and the dispersing of his band in November, 1903. The only outlaw band now organized is led by one Antonio Gonzales, and operates through the mountain country of the Magulanes.

The provincial jail at Calapan is fairly secure, and its sanitation is good. Seventy-five prisoners have been confined therein during the past year, none of whom has escaped.

In the court of first instance at Calapan 20 convictions for criminal and political offenses have been secured during the year. The total of time sentences awarded amounts to fifty-one years, and the fines imposed to ₱300.

ROMBLÓN.

The small islands constituting this province have been peaceful and quiet during the year. Increased attention to agricultural pursuits on the part of the inhabitants would appear to promise future prosperity.

The provincial jail at Romblón has been in charge of the constabulary since August 18, 1903. Its security and sanitation are excellent. The total number of prisoners confined in this jail during the past year is 50, two of whom escaped but were subsequently recaptured.

In the court of first instance at Romblón there have been 42 convictions for criminal and political offenses during the year. The approximate sum total of time sentences awarded amounts to thirty-three years, and of fines imposed to ₱750.

At the beginning of the period covered by this report a ladrone band, numbering about 8 individuals, led by Vicente Padilla, a notorious murderer and ladrone, was operating through the province. His band was dispersed by the constabulary, and at the present writing Romblón Province is entirely free from ladroneism.

SORSOGÓN.

Sorsogón, the scene of the Calache and de la Cruz fanatical insurrections in the past, has become one of the most peaceful provinces in the district. No organized ladroneism has existed during the past year, and the people are becoming industrious and contented. The satisfactory conditions now existing in this province are mainly due to the able and energetic administration of the provincial governor, Don Bernardino Monreal.

The provincial jail was placed in charge of the constabulary in December, 1903, but was again turned over to the provincial authorities in June of the present year. The jail is habitually kept in good sanitary condition. The building is secure in itself but is badly arranged for a jail, and needs more subdivisions, which the province appears to be financially unable to arrange. The total number of prisoners who have been confined in this jail during the year is 73, of whom 7 escaped, 2 of the latter having been subsequently recaptured.

There were 46 convictions by the court of first instance, at Sorsogón, during the year, for all offenses, 1 life sentence being awarded. The total of time sentences imposed was one hundred and eight years, and of fines ₱6,557.

TAYABAS.

Marked improvement, both politically and materially, increased agricultural and industrial endeavor, and general commercial activity are everywhere apparent throughout this large and important province. Conditions as to law and order are better at present than at any time since the establishment of civil government. The various ladrone bands, which had operated in this province during the year have been, for the most part, dispersed and disorganized by a vigorous constabulary, ably seconded by the scout companies serving in the province.

At the present writing there exist but two ladrone bands, whose united strength does not reach 20 men and whose armament does not exceed 8 firearms. Vicente Arugay, with 2 firearms and a band of 10 men, operates in the vicinity of Tayabas, Sariaya, and Pagbilao, and Pantaleon Villafuerte, alias Panta, who properly belongs to Isabela Province, with a band of 6 men armed with five or six guns, operated in the vicinity of Kasiguran. From time to time reports are received of a band with 5 guns on the island of Alabat, but there is no definite information regarding same and it is believed to be Cabayo's band temporarily absent from Camarines Norte. These constitute the entire ladrone contingent of Tayabas Province.

However, to maintain the existing satisfactory conditions the constabulary will be obliged to continue active for sometime to come, and no reduction in number of officers or men serving in this province can be seriously contemplated. The inhabitants of certain localities are exceedingly inflammable and easily influenced by the oratorical flights and acrobatic gyrations of demagogic outlaws or fanatical propagandistas.

The provincial jail of this province was turned over to the constabulary in June, 1904, at which time it was situated in the town of Tayabas. In March, 1905, the jail and prisoners were transferred to Lucena, the provincial capital. The building used at present is of a temporary character, and secure only with a strong guard. Its sanitation, however, is excellent. The provincial authorities are about to construct a new jail at Lucena, which, when completed, will be more suitable and secure.

An approximate total of 150 prisoners have been confined during the year, 9 of whom escaped while at work under provincial guard. Of these, 3 have been recaptured by the constabulary.

In the court of first instance, in Tayabas Province, 98 convictions have been secured during the year, 2 death sentences being awarded. The aggregate of time sentences amounts to two hundred and sixty-six years, and the total amount of fines imposed is ₱7,007.

The following is quoted from a recent report of the senior inspector:

"The undersigned desires to express his appreciation of the uniformly courteous treatment received from the provincial board and the officials of the different towns for their readiness to respond when called upon for assistance, to which must be largely attributed the quiet and peaceful conditions which prevail throughout the province."

MUNICIPAL POLICE.

Reports from all provinces, verified in most cases by personal inspection by the undersigned, show that the present municipal police organization, as a whole, is worse than useless. The police not only are seldom of any assistance to the constabulary in outside operations, but in very few instances have they even put a stop to gambling and petty thieving in the towns to which they belong. This condition I consider to be due to the fact that, from time immemorial, the Filipino police have been considered and treated as muchachos by the presidentes and other municipal officials. Referring to which custom Captain Swann, senior inspector of Albay, reports as follows:

"The municipal police, except in three or four towns, are a positive menace to the peace and tranquillity of the province. They are almost without exception from the lowest and least respected class, are ignorant, undisciplined, and practically servants for the presidente and other municipal officials. If a representative presidente buys a fighting cock in the nearest town he sends a municipal policeman after it. If his wife and children go on a trip they are attended by two policemen, who generally play the part of nurse and maid of all work. When the presidente comes to the provincial capital he rides a horse and is frequently followed by three or four policemen on foot, who bring his lunch, hand bag, and other baggage, and if he writes a note to a friend in a neighboring town a policeman delivers it."

What Captain Swann says is more or less applicable to many other provinces. In this district I consider that the only really efficient police forces are those of Nueva Cáceres, Ambos Camarines Province, and of Lucena, Tayabas Province, the former due to the fact that it has been turned over to the senior inspector, and the latter because it has an efficient American chief of police, backed by an energetic, up-to-date presidente, and because the men, as a result, are well paid and disciplined.

In the case of Nueva Cáceres, the municipal council have done everything in their power to again secure complete control of the police. They have reduced the salary of the chief until he now receives less than their ordinary "escribientes;" they have introduced exasperating regulations into their police code; and in general have endeavored to make the men dissatisfied with their positions. Incidentally it should be mentioned that the present police force has practically broken up gambling in Nueva Cáceres. That this force continues in efficient existence is due to the fact that the senior inspector has the provincial board as a unit back of him.

In addition to the two towns already mentioned, there are a few others where the local police have rendered a very good account of themselves, but this is an exception to the rule and is invariably due to the influence of a particularly conscientious and capable presidente.

I am also convinced that in many cases the municipal police, instead of aiding in the suppression of gambling, are rather its abettors. Such a condition naturally exists wherever many of the officials or "ilustrados" are addicted to the vice. Discussing this matter the senior inspector of one of our richest and most progressive provinces says:

"I am positive that in most cases at least some of the municipal officials are cognizant of the existence of games of chance, and believe that they have either organized them themselves or had them organized for the purpose of graft. It can be readily understood that to secure proof of these crimes and to connect any municipal officials with them would be a difficult matter for the constabulary, because the municipal police have original jurisdiction in such questions,

and where they are interested in keeping us from finding out the facts they are generally successful. To put the police under the constabulary, as provided in Act No. 781, would not improve conditions in the least, as the presidente could still name his henchmen as members of the force and we could not remove them for inefficiency."

The present cost of the 1,096 municipal police in 131 towns of the 7 provinces of this district is ₱168,517. In but a few instances does this include the cost of barracks and quarters, clothing, subsistence, or transportation, which are frequently furnished by the town, or the cost of firearms where same are issued. The total actual cost would approximate ₱250,000. It is estimated that the entire cost of maintaining the municipal police throughout the archipelago would not fall far under ₱1,500,000 per annum, while the general value of their services should be expressed by a negative quantity.

Placing the actual cost of a constabulary at ₱500, and of the average constabulary lieutenant at ₱2,500, there could be distributed throughout this district 9 trained and selected officers with an average per town of 4 well paid and disciplined police at a cost of ₱284,500 per annum, an increase of only 13.8 per cent over the present cost of the municipal police.

While, as stated by a prominent provincial official, the present municipal police, as a rule, are "incubuses" on the communities, yet an efficient police organization would be nearly self-supporting. The town of Lucena has a larger police force and pays a higher salary than any other municipality in the district; nevertheless, the fines collected as a result of their energetic work are about one-half the entire cost of the police, as will be seen from the following communication of Mr. William O. Thornton, treasurer of Tayabas Province:

PROVINCIAL GOVERNMENT OF TAYABAS,
OFFICE OF THE TREASURER,
Lucena, P. I., June 30, 1905.

SIR: In compliance with your request of yesterday, I have the honor to furnish the following statement of the annual cost of the municipal police of Lucena and the amount of fines received from police arrests during the fiscal year 1904:

Salaries of policemen.....	₱5, 568. 00	
Salary of chief of police.....	1, 800. 00	
		₱7, 368. 00
Fines during fiscal year.....	2, 939. 00	
1,656 days' work, at 50 cents per day, value of labor performed by municipal prisoners.....	311. 00	
Estimated saving in expenses by detail of policemen to perform duties as foremen of laborers when their services could be spared from police duty, 300 days, at ₱1.50 per day.....	450. 00	
		3, 700. 00
Difference		3, 668. 00

It will therefore be seen that the actual cost of maintaining the police of Lucena during the last fiscal year is ₱3,668. It is believed that a much better record will be made during the present year. However, the above is an excellent showing compared with that of previous years.

Very respectfully,

WM. O. THORNTON,
Treasurer, Province of Tayabas.

Capt. E. R. HIGGINS,
Adjutant Second Constabulary District, Lucena, Tayabas, P. I.

With the foregoing should be included the additional taxes which are collected as a direct result of the work of a police force of this character, and like results would obtain in all the pueblos if the police were equally active.

While recently stopping at a town of over 16,000 inhabitants, where an annual dog tax of a peso per animal was in force, I learned that less than ₱20 had been collected for the entire year. It is a well-known fact that in all towns, whether Filipino or not, the dog population will be a large percentage of the human, and there are very few towns in these islands where a dog tax of the kind mentioned would not be in itself, if enforced, almost sufficient to support the police. In any event, a police force that conscientiously enforces all the laws and municipal ordinances will not only pay for itself, but will bring

in a substantial revenue to the town in the way of taxes collected and fines imposed for violations of general and local laws.

Except in very rare instances, I am not in favor of issuing firearms to municipal police as now organized, and am convinced that all of the more important ladrone movements during the past three years in the Luzón provinces of this district owed their existence and temporary successes to the prestige gained by the capture of guns and revolvers from the police and volunteers.

In order to learn the views of the most prominent officials in the district on this subject, on June 16, 1905, I sent the following telegram to Judge Grant T. Trent, court of first instance, and to each of the provincial governors, provincial treasurers, and provincial supervisors:

"Please wire me whether or not you consider present municipal police organization your province efficient and satisfactory, also any brief recommendations for its improvement."

To this telegram the following answers were received:

DAET, AMBOS CAMARINES,

June 19-20, 1905.

Colonel BANDHOLTZ, *Lucena*:

Municipal police should be reorganized. If abuses in municipalities in Albay Province, and especially gambling, were prohibited, it would certainly be a great relief to the people. If you could place strong constabulary man there as inspector and have all municipal police under his charge, I think this would relieve the situation to a great extent.

TRENT, *Judge*.

MASBATE, June 16, 1905.

Colonel BANDHOLTZ *Lucena*:

Re your telegram this date; consider municipal police very inefficient and unsatisfactory. Recommend they be placed under the control and supervision of the senior inspector of constabulary with power to fix the number, appoint, and remove. Also recommend they be paid a uniform salary throughout province.

HUNTER,

Supervisor-Treasurer.

[Translation.]

MASBATE, June 22, 1905.

Colonel BANDHOLTZ, *Commanding, Lucena*:

Referring to your telegrams of the 16th and 21st instant, in regard to municipal police organization of this province, they are of satisfactory efficiency and capacity, considering that they are not armed, which is due to the fact that the presidentes and councilors did not offer the required bonds. I recommend that this matter be regulated so that the police can carry arms without said bonds, and municipal officials be not obliged to give the bonds mentioned.

BAYOT,

Provincial Governor.

CALAPAN, MINDORO, June 23, 1905.

Colonel BANDHOLTZ, *Lucena*.

To date police have been nothing more than muchachos. Naujan police did good work in Gasic's time, since which time nothing to do. Naujan and Lubang have 6 rifles each; Pinamalayan and Calapan have revolvers. Recommend all be armed with revolvers and not rifles.

R. S. OFFLEY,

Captain, Thirtieth U. S. Infantry,
Governor of Mindoro.

ROMBLÓN, June 16, 1905.

Colonel BANDHOLTZ, *Lucena*.

Present municipal police force inefficient and unsatisfactory. Would recommend that force be placed under the command of the senior inspector of each province. All acts of councils and orders of governor to be given through him

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 77

to various detachments for enforcement. In fact, police to be removed entirely from control or influence of municipal officials under such provision of law that will cause least friction and best serve the public interests. Governor (Sanz) is in Manila.

REIS,
Supervisor-Treasurer.

[Translation.]

ROMBLÓN, June 29, 1905.

Colonel BANDHOLTZ, *Lucena.*

I have been absent since the 9th of the month. Referring to your telegrams of 21st and 28th, my opinion is that municipal police ought to be under constabulary control and inspection of provincial board. Present municipal police service is deficient.

SANZ,
Provincial Governor.

[Translation.]

THE PROVINCIAL GOVERNMENT, PROVINCE OF TAYABAS,
Lucena, Tayabas, P. I.

[Extract from the minutes of the provincial board of Tayabas Province, dated Lucena, June 30, 1905.]

On motion, be it resolved to reply in the following terms to the letter of Col. H. H. Bandholtz, U. S. Army, commanding second district, Philippines Constabulary, Lucena, P. I., asking the opinion of the provincial board in regard to the efficiency of the municipal police of the province, and at the same time requesting recommendations for its improvement:

The municipal police in almost all the towns of this province fall far short of performing the duties imposed upon them by law, and this deficiency is caused by the imperfect organization, which renders them unable to accomplish the end for which they were created. The exclusive power exercised by the municipal council in the organization of the police of each town; the control which they exercise over the appointment of the officers; the lack of uniformity in the duties which they perform, as well as the small salaries which they receive in most of the towns; the lack of discipline and the impossibility of their defending the towns on account of the lack of arms—such are the causes which have produced the inefficiency of the police organization in the province.

In order that the municipal police may properly accomplish their mission in the towns, the provincial board of Tayabas recommends the adoption of the following measures:

First. That the municipal police be under a local police board composed of the municipal presidente as chairman and two other members, who shall be appointed by the provincial governor, subject to the approval of the provincial board. The appointment of members of the police to be in the hands of the local board, subject to the approval of the provincial board.

Second. That the regulations governing both the local board and the police be drawn up by the provincial board, who shall prescribe one class of uniform and the same pay for all the police of the province and shall draw up suitable regulations for its government.

Third. That the regulations drawn up by the provincial board shall prescribe punishments to be inflicted upon the police for their violation by means of a fine, and in case they have no money, deducting the same from their pay or by imprisonment not to exceed sixty days, which shall be imposed by the local police board or by other proper court over which the provincial board shall have supervision and control. The punishments to be inflicted shall be based upon the present schedule of constabulary punishments. The more serious offenses to be tried by the judge of the court of first instance under existing law.

Fourth. That the municipal police be armed with revolvers, and when once armed that they be inspected at least once every three months by a constabulary officer detailed exclusively and permanently for this work, who shall submit to the provincial board a report of the result of his inspections. That the inspector shall have power to suspend any member of the municipal police of any of the municipalities for neglect of duty or for violation of police regulations, furnishing the municipal presidente in writing information of same,

explaining the reasons for said suspension. The suspension shall take effect immediately, but the inspector shall at once send a copy of the charges to the provincial board, who shall have authority to investigate the cause of suspension and order the dismissal of the suspended policeman or reinstate him in his position; and that the same powers which are invested in the inspector be also conferred upon the senior inspector of constabulary in his official visits to the towns of the province.

R. PARÁS,
Provincial Governor.
WM. O. THORNTON,
Provincial Treasurer.
H. C. HUMPHREY,
Provincial Supervisor.

SORSOGÓN, June 19, 1905.

Colonel BANDHOLTZ, *Lucena*:

Re telegram 16th, do not consider police force very efficient, but it is not below that of other provinces I have seen. Could be improved by reduction one-half and increase of pay to comfortable living expenses.

STEWART,
Provincial Treasurer.

SORSOGÓN, June 16, 1905.

BANDHOLTZ, *Lucena*:

Police of this province are costing ₱25,000 per year for salaries alone. They are inefficient and practically worthless. Recommend that police forces be abolished and their work turned over to constabulary. Another solution would be to greatly reduce the number of police and put balance under control of senior inspector of constabulary.

STEVENS,
Provincial Supervisor.

(No reply from Governor Monreal because of his absence.)

ALBAY, VIA CAMP DARAGA,
June 19-20, 1905.

Colonel BANDHOLTZ, *Lucena, Tayabas*:

Re your telegram municipal police; my answer comes by mail, being rather too long for telegram. Shortly, am not satisfied with them.

SANTOS,
Provincial Governor.

(Letter mentioned not received at date of this report.)

ALBAY, June 17, 1905.

Colonel BANDHOLTZ, *Lucena*:

Municipal police in this province a farce. Do no good except as muchachos for municipal officers, and am not certain that they do no harm. They have not the slightest conception of the duties of an officer of the law. I think should be under the general supervision of a police board, consisting of the senior inspector of constabulary, the presidente, and the chief of police. The chief should be appointed by the senior inspector, who should have the power to remove any member of the force. Regulations should be prepared by the senior inspector and approved by the provincial board. Numbers should be reduced and salaries and efficiency increased. Provincial board recommended this, but it was not favorably considered, as there were no constabulary officers available. Think it would not require more constabulary officers than now. Some changes should be made or force disbanded.

CROSSLAND,
Provincial Supervisor.

ALBAY, June 17-18, 1905.

Colonel BANDHOLTZ, *Lucena*:

Re inquiry municipal police; my opinion, wholly inefficient. Recommend substitute constabulary.

REYNOLDS,
Provincial Treasurer.

DAET, AMBOS CAMARINES, June 23, 1905.

Colonel BANDHOLTZ, *Lucena*:

Replying to your telegram, municipal police organization is not very satisfactory, except in Daet, Libmanan, Nueva Cáceres, and Iriga, of which towns the police perform their duties efficiently. By mail send recommendations.

PIMENTEL,
Provincial Governor.

[Translation.]

OFFICE OF THE GOVERNOR,
PROVINCE OF AMBOS CAMARINES,
Nueva Cáceres, P. I., June 29, 1905.

Col. HARRY H. BANDHOLTZ,
Philippines Constabulary, Lucena, Tayabas.

SIR: In my telegram of the 23d instant I stated that I would send you by mail further information in regard to the municipal police of this province. I beg to repeat that, with the exception of the police of Daet, Libmanan, Nueva Cáceres, Iriga, and Goa, who properly perform their duties, the services of the police of the remaining towns are inefficient on account of the lack of discipline and instruction, and this may be due to the fact that a majority of the towns have not sufficient funds to maintain an efficient service and to pay a good salary to a chief of police to command and instruct them in their duties.

One of the causes to which is due the difficulty in the municipal police is that the term of office of the chief, as well as that of the other municipal employees, in conformity with article 26 of Act No. 82, expires on the same date as that of the municipal presidente. As a result, if the lieutenant of police, who has disciplined the police and has properly performed his duties, is not acceptable to the newly elected presidente the latter may appoint a new lieutenant, who may be inefficient and may not discipline his subordinates. The bad police service is due to the foregoing. If the aforementioned article were amended so as to require the approval of the provincial board for the continuation or removal from office of the chief of police the service might be somewhat remedied.

Very respectfully,

JUAN PIMENTEL,
Provincial Governor of Ambos Camarines.

NUEVA CÁCERES, June 19-20, 1905.

Colonel BANDHOLTZ, *Lucena*:

Municipal police this province are not effective as preservers of law and order. Think constabulary should be increased and do all police work.

BRADEN,
Provincial Treasurer.

NUEVA CÁCERES, June 19, 1905.

Colonel BANDHOLTZ, *Lucena*:

Replying to your telegram, do not consider municipal police organization effective or satisfactory in number of municipalities, this province. As an improvement, would recommend better pay and competent supervision.

SHUMAN,
Provincial Supervisor.

In addition, the following is quoted from the annual report of Capt. Charles A. Reynolds, provincial treasurer of Albay, one of the most experienced and competent provincial officials in the islands:

"The municipal police of this province, almost without exception, are incubes on the communities. They are choresmen. Where the peace is kept it keeps itself. The municipal police should be selected and removed by the senior inspector of constabulary. There should be fewer of them, and their compensation should be worth while."

Referring to the foregoing replies, it will be seen that Governor Bayot, of Masbate, stands alone as being satisfied with existing conditions, and even recommends that arms be furnished the police of his province without bonds. Owing to the isolation, small territorial extent, comparative poverty, and absence of arms in the hands of the police of Masbate, it has offered no attractions to ladrones in the past, which probably accounts for Governor Bayot's not understanding that his liberal recommendation would soon attract outlaws, if it did not create them.

If Captain Offley, the governor of Mindoro, can not get proper service from his police, the present system is certainly seriously defective.

Of the 17 answers received only 1 was satisfied with present conditions; 5 stated in effect that the present police organization was inefficient, but offered no material suggestions for its improvement; 8 were of the opinion that the present organization was inefficient and recommended constabulary control to a more or less degree; while 3 bluntly recommended that the police be abolished and the constabulary substituted.

The most effective remedy might be to abolish the municipal police and increase the strength and enlarge the scope of the constabulary sufficiently to enable it to handle the municipalities in addition to its other duties. Many provincial governors would undoubtedly oppose such a measure as depriving them of some of their prerogatives, and it would be sure to raise a storm of protest from those towns in which the police have always been considered as a perquisite of the presidente or of the local cacique. Owing to the violent opposition such a proposition would be sure to encounter, it would probably be advisable to simply reorganize the present municipal police forces along more logical and modern lines.

The police of all the municipalities in each province should be organized into a provincial corps under the immediate orders of the senior inspector of constabulary, who, subject to the approval of the provincial board, should have authority to appoint, promote, dismiss, and assign to stations any of its members. The number of men, the pay, and the uniform should be determined and fixed in each province by the provincial board, as now authorized in Act No. 781. It is believed, however, that the police uniforms throughout the archipelago should be of the same general type as regards cut, material, color, facings, equipments, and insignia, with a distinctive badge indicating the town and province. The police should of course be under the municipal presidente to the extent of enforcing local ordinances, keeping the peace, and making arrests, and likewise under the general supervision of the provincial governor as executive officer of the province.

Minor offenses should be punished by the nearest constabulary summary court, by the local justice of the peace, or other suitable court, and graver offenses by the court of first instance, all based on the present constabulary schedule of punishments.

In each province there should be detailed on special duty as provincial chief of police and under the orders of the senior inspector a competent constabulary, who, in some of the larger provinces, should have one or more assistants. These officers should make visits of inspection and instruction to each town at frequent but irregular intervals, which, taken in connection with the already prescribed visits of the provincial governor and senior inspector, would tend to keep the police constantly on the qui vive. I have learned of one province, not in this district, where the different towns already contribute a small amount, in proportion to their population, toward the salary and expenses of a competent Filipino who serves as a provincial chief of police and also as an assistant to the senior inspector, relieving the latter of all the routine work connected with the police. This arrangement is understood to be fairly satisfactory.

The organization should be such as to admit of the transfer of police from one town to another whenever it is not desired to leave them too long subject to local influences, and in those provinces already having a provincial police the latter should be absorbed by the new organization.

While the foregoing does not go into details and may itself possess many defects, it is nevertheless believed to be superior to the existing system, and could be improved upon during the process of evolution. The municipal police certainly needs reorganizing, and it is believed best results would obtain by adopting the same regulations and general form of organization throughout the islands.

PHILIPPINE SCOUTS.

Although at the beginning of the fiscal year there were 11 companies of Philippine Scouts on duty under the civil government in this district, that number, owing to greatly improved conditions, has now been reduced to 6. These remaining companies are stationed as follows: The Tenth Company, at Candelara and Tiaon, Tayabas Province, where it can watch and guard the turbulent Tayabas-Batangas-Laguna border; the Forty-second Company, at Boac and Santa Cruz, Marinduque Island, where it dominates the entire island; and the Thirty-first, Thirty-second, Thirty-third, and Thirty-fourth companies form a complete chain of posts and subposts on the Pacific coast, stretching from Daet, Ambos Camarines Province, to Kasiguran, Tayabas Province. Of these companies, the Forty-second has but recently been placed under the civil government, and the Thirty-first and Thirty-fourth have had but little campaigning to do against outlaw bands. Nevertheless, the country surrounding their stations has always been prolific in fanatical organizations, and these companies should not as yet be removed from the tactical command of the district chief.

First Lieut. Frederick Koch, of the Tenth Company, has handled an exceedingly delicate situation with great tact and understanding, and Second Lieut. Frank L. Pyle, of the same company, is without a superior in the field, and has done superb work in cleaning up the ladrone-infested section about Tiaon.

First Lieut. George M. Wray, commanding the Thirty-second Company, is one of the best officers at field work I have ever seen, and has struck terror to the hearts of the bandits of eastern Tayabas and Camarines Norte, and has been ably seconded by Lieutenant Drake.

First Lieut. Alfred Roeder, commanding the Forty-second Company, rendered most efficient services during the Albay campaign, and is now giving additional proof of his ability on Marinduque.

Captain Lelsenring and Lieutenant Baker, of the Thirty-third Company; Lieutenants Covell and Browne, of the Thirty-first, and Lieutenants Holtman and White, of the Thirty-fourth companies, have also rendered highly efficient and satisfactory services.

In the death of First Lieut. Ryder Davis, Thirty-third Company, at Daet, Ambos Camarines Province, on December 13, 1904, the Philippine Scouts lost one of their most promising officers. Lieutenant Davis was a man of education, and an able, fearless, and energetic officer.

Tenth Company.—First Lieut. Frederick Koch commanding; stationed at Candelaria, Tayabas Province, with substation at Tiaon, Tayabas Province, commanded by Second Lieut. Frank L. Pyle. During the year 40 expeditions were made, covering 1,965 miles; 4 engagements with outlaws were participated in, resulting in the killing of 2 outlaws and the capture of 21; 11 firearms and many war bolos were captured, and 45 horses were recovered.

Fourteenth Company.—First Lieut. Charles E. Boone commanding; stationed at Ligao, Albay Province, until relieved from duty with the civil government in March, 1905; Second Lieut. Edward L. Baker, jr., on detached service with the Thirty-third Company. During the portion of the year this company was on duty with the civil government they participated in 5 expeditions, covering 1,325 miles, and captured 5 ladres and 2 convicts who had escaped from Camp Beardsley, Albay Province.

Seventeenth Company.—Capt. Robert J. Reaney commanding; First Lieut. L. E. Cheatham and Second Lieut. Alfred M. Allen; stationed at Guinayangan, Tayabas Province. This company was relieved from duty with the civil government in June, 1905. Forty-five expeditions were made and 2,306 miles covered during the year, 4 outlaws being killed and 28 captured, together with 10 firearms.

Twenty-sixth Company.—Second Lieut. Joseph Rodgers commanding; stationed on the island of Catanduanes, Albay Province. This company was relieved from duty with the civil government in December, 1904. Owing to the vigorous operations of this company while under the civil government the country in the vicinity of its station was thoroughly cleaned up, and no ladrone bands exist on the island of Catanduanes.

Thirty-first Company.—First Lieut. Marcus Covell commanding; Second Lieut. J. W. Browne on duty with company; stationed at Atimonan, Tayabas Province. Thirty expeditions were made by this company during the year, covering 800 miles of territory, and capturing 1 ladrone.

Thirty-second Company.—First Lieut. George M. Wray commanding; Second Lieut. H. R. Drake on duty with company; stationed at Calaoag, with substations at Barcelona and López. During the past year this company has been one of the most active in the district; it has had 37 expeditions, covering 1,890 miles, and participated in 3 engagements, in which 9 outlaws were killed, 8 wounded, and 9 captured, together with 4 firearms.

Thirty-third Company.—Capt. F. A. Lelsenring commanding; First Lieut. J. Uhrig and Second Lieut. E. L. Baker, jr.; stationed at Daet, Ambos Camarines, with substations at Labo, Mercedes, and Paracale. During the past year this company made 25 expeditions, covering 3,164 miles, and had 1 engagement, resulting in the wounding of 3 outlaws, all of whom escaped.

Thirty-fourth Company.—First Lieut. John Holtman commanding; stationed at Infanta, Tayabas Province, with substation at Baler, Tayabas Province, under Lieut. Howard White, and at Kasiguran, Tayabas Province, under a noncommissioned officer. During the year 7 expeditions were made, covering 349 miles.

Forty-first Company.—First Lieut. J. Bennett commanding; stationed at Calapan, Mindoro, with substation at Bulalacao, Mindoro, commanded by Second Lieut. M. E. Morris. This company was relieved from duty with the civil government in June, 1905. No operations were reported by this company.

Forty-second Company.—First Lieut. Alfred Roeder commanding; stationed at Ligao, Albay Province, with substation at Oas, Albay Province, commanded by Second Lieut. T. F. Moran. This company, by particularly active and energetic work, succeeded in cleaning up the ladrone-infested section about Ligao.

Forty-sixth Company.—First Lieut. H. Weusthoff commanding; stationed at Infanta, with substations at Baler and Kasiguran until October, 1904, when transferred to Ragay, Ambos Camarines. This company was relieved from duty with the civil government in December, 1904. No record of the operations of this company is on file at these headquarters.

RECOMMENDATIONS.

In nearly all provinces the senior inspectors are, from the nature of their duties, required to assist the provincial sheriffs, and, in fact, perform a large portion of the latter's duties. It is believed that economy and increased efficiency would result by merging the two offices mentioned, and by paying the senior inspector an increase of from ₱500 to ₱2,000 per annum, according to the size and wealth of the province and the character of the duties to be performed. In the province of Tayabas the province and municipalities during the past fiscal year have paid sheriff's fees amounting to ₱2,167.62, to which should be added the per diem of ₱6 paid the sheriff by the insular government during the sessions of the court, and amounting annually to at least ₱600. From the foregoing it can be seen that the senior inspector could be paid a large per cent of the sheriff's income, and there would still remain a handsome saving to the government. In smaller provinces, like Romblón and Masbate, these expenses would naturally be much smaller, but, added to the per diem, would certainly raise the sheriff's pay to the minimum increase recommended, and in all such cases deputies could be appointed or the provinces united, as is done frequently in the case of fiscals. At present there is but one fiscal for the last two provinces mentioned.

While the allowance to constabulary officers for quarters is intended to properly house them, and in most cases is sufficient, yet there are many marked exceptions, especially in the rich, populous, and more important provinces, and in such provinces the cost of living is invariably greatly in excess of that in others. The cost of living in Albay province of this district is out of all proportion to what it is in other provinces, and Tayabas Province is a close second to Albay. This state of affairs is not believed to be confined to the second district, but undoubtedly exists to a greater or less extent in all other districts. It is not believed to be the intention to financially cripple our best officers, and it is recommended that district commanders be authorized to reasonably increase the quarter allowances whenever in their judgment the present allowances are wholly insufficient.

A constabulary officer on duty in a ladrone-infested province is necessarily almost constantly in the field, exposed to the elements, and suffering many

privations, and unless of a most robust constitution he must soon break down. Ill health also frequently results from his inability to obtain proper nourishment. It is recommended that efforts be made to arrange for periodical supplies of fresh meat; and in view of the fact that coast-guard boats are now accorded the privileges of the military commissaries, it is believed there would be no great difficulty encountered in securing an extension of this privilege to the commissioned officers of the constabulary, at least to include fresh beef.

Since the beginning the constabulary organization has suffered from a lack of officers, but it is believed that, as a rule, it is safe to diminish quantity if improved quality is thereby obtained, and the latter can be accomplished only by offering attractive inducements in the way of pay and position all along the line. Desirable promotions would result by increasing the importance of the position of senior inspector, and the proposed company organization will do much to promote the efficiency of the constabulary by giving the senior inspectors more time to visit and inspect the police and different stations of troops; it will encourage junior officers in command of companies to extra exertions to demonstrate their ability, and it will induce competition and create an esprit de corps by giving to all a more fixed and clearly defined status. The appointment of provincial sergeants major and commissary sergeants will also create additional grades to which ambitious soldiers may aspire.

There is no position under the government that requires higher qualifications in the way of education, tact, perseverance, energy, patience, integrity, and moral example than that of an officer of the Philippines Constabulary. Thrown into positions of trust and responsibility, he should be able to handle unexpected and complicated situations with judgment and firmness; he should be able to instruct and advise all the inhabitants and municipal officials, especially of isolated or outlying towns, as to their duties as citizens and obligations as officials, and in general should inspire them with respect and confidence. Men of this kind can not, as a rule, be obtained and kept any length of time by the present inducements in the way of salary and perquisites. It is recommended that the pay of all grades be increased.

If the constabulary is to be a permanent organization it would appear that the time is now ripe for the purchase of land and the erection of permanent offices and quarters. Rents in this district, especially in the provinces of Tayabas and Albay, are exceedingly high, and it is believed that two or three years' rent would pay for the purchase of land and the construction of buildings that would last at least double that time. In some provinces the rents are still moderate and such action could be longer deferred.

It has been noticed by the undersigned that constabulary officers, as a rule, are very careless in complying with their social obligations and the requirements of military etiquette. This is believed to be due to ignorance of the customs of the service rather than to any intentional neglect. A newly arrived officer seldom, if ever, promptly pays his respects to his commanding officer, and officers are not, as a rule, punctilious in visiting newly arrived army officers or other constabulary officers. It is believed that a general circular explaining the customs in such cases would promptly remedy the defect and at the same time do much to raise the tone of the constabulary.

It is recommended that printed appointments or warrants be furnished all noncommissioned officers in order to stimulate their pride and to increase the importance of the positions.

Existing orders require that noncommissioned officers once reduced can not be reappointed until six months after reduction. Several of the senior inspectors in this district have informed me that owing to the difficulties in obtaining a reliable class of men for noncommissioned officers they frequently are obliged to inflict upon delinquents a punishment less than the offense deserves, owing to the necessity of permitting them to retain their chevrons on account of the lack of material for the positions mentioned. It is believed that the reduction of the six months' ineligibility to three months would in general be more satisfactory.

From all parts of this district there have been expressed regrets that a book of regulations has not been compiled and issued for the constabulary. There is certainly a crying need for such action, and when issued it is believed there will be less difficulties encountered by both administrative and accountable officers.

It is believed that a printed form for station or section reports similar to the present provincial monthly report would greatly diminish the work at provincial headquarters, and now that companies are about to be organized, station or

section commanders can report to the company commander, and he in turn to the senior inspector.

At present there are in the constabulary two classes of majors, one with the title of major and assistant chief, and the other with the title of major and senior inspector. As there is no grade of lieutenant-colonel, and if it is intended to continue military titles, it is recommended that the majors and assistant chiefs receive the title of lieutenant-colonel and assistant chief, continuing with their existing rate of pay. The present system is certainly confusing to outsiders, and is not believed to possess any compensating advantages.

The system of descriptive books now in use is cumbersome and not so satisfactory as would be a book with detachable leaves. This would enable the company commander or senior inspector to have together all the descriptive lists of men actually in the service, with the others filed for prompt and ready reference.

It is not believed that the information division is in close enough touch with the districts and provinces, and I would recommend that an officer of the division be assigned to each district headquarters. The allowance to this district is ₱2,000 per annum, which is wholly insufficient for a systematic and efficient organization, and does not admit of suitably rewarding special services nor the permanent employment of any number of trained detectives. The amount mentioned does not even allow regular expenditures of ₱25 per month each to the provinces of this district.

It would be a great benefit if there were assigned for duty in each constabulary district an experienced and competent representative from the attorney-general's office to act as legal adviser to the district commander and to the senior inspectors. He could also act as supervisor of the different fiscals and could prosecute the more important cases. It is understood that some such plan has been contemplated.

It has been observed that there is a growing tendency on the part of supply officers to consider themselves as independent of their senior inspectors, and they seem to be loth to receive his instructions or to communicate through channels. One officer whose attention had been called to his neglect in the latter respect stated he had been communicating direct for two years and had always received the desired information. Nevertheless, the chief supply officer has on various occasions invited my attention to similar conduct on the part of different officers and requested me to issue the necessary instructions to remedy the same. It may be that the insubordinate spirit mentioned is due to supply officers receiving nearly the same, and frequently more, pay than their senior inspectors. In any event, they should be given to understand that they are provincial subordinates, and staff officers of the supply division, and that they are not to arrogate to themselves independent functions.

Experience has amply demonstrated that a single-shot firearm, loaded with black-powder cartridges, and without a bayonet, is an inadequate weapon with which to resist the bolo rushes of an overwhelming number of fanatical outlaws. A scout officer on duty with the undersigned during the Albay campaign, speaking sarcastically, complained that after firing a volley in the hemp fields it was necessary to retire and remain several days in an adjoining province waiting for the smoke to disappear. The outlaws will deliberately provoke and draw the fire of their antagonists solely for the advantage which the cloud of smoke gives them in their bolo rushes. With empty guns, without bayonets, and with their view obscured by the smoke of their own guns, the constabulary or scout forces are at a decided disadvantage. Even with the notoriously poor, because undeveloped, marksmanship of the native troops it is not believed that bolo rushes would be successful against magazine rifles, except when a total surprise, at very close quarters, and against exceptionally small detachments. I recommend a magazine carbine, with a bayonet, for both scouts and constabulary, although a suitable bolo might replace the bayonet. Objections to such action are frequently heard, because it is stated that the capture by outlaws of such arms would be of incalculable value to them. This I greatly doubt, because in this district there have always been a few scattered Krag or Mausers in every ladrone band, and these weapons were always jealously guarded, and seldom used on account of the difficulty of replacing expended ammunition. This difficulty of obtaining or manufacturing steel-jacketed ammunition, which immediately confronts the outlaw, would appear to more than counterbalance any gain they might derive from magazine guns falling into their hands, through treachery or otherwise. In any event, the issue of such arms to the government forces would, for the reasons above stated, lessen the probability of their capture by ladrones.

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 85

All municipal officials are required, in section 5 of Act No. 781, as soon as practicable, to give notice to the provincial governor or inspectors of constabulary, in the province, of the presence of any bands of ladrones or brigands or other persons threatening the peace of the community within their jurisdiction, or any act of robbery or theft by such bands when the offenders are at large. As to which person shall be informed is left entirely to the discretion of the municipal officials, who, although the message may require many days for its delivery, usually notify the governor in spite of the fact that there may be a constabulary officer stationed in their town. Furthermore, "as soon as practicable," to many of the officials concerned, may mean a week or a month. If the requirements were that such information be furnished both the provincial governor and inspectors of constabulary immediately on being received, this matter would be greatly improved.

CONCLUSION.

At no time since American occupation has peace prevailed to a greater extent than at present, nor in the history of the islands has the territorial limits of this district been so free of outlaw bands and fanatical organizations.

In spite of the recent droughts and the serious attendant damage to the cocoanut and rice crops, there has been a marked increase in commercial activity and a decided healthier tone to business generally throughout the district. The more intelligent and educated Filipinos seem to realize that the hope of these islands is in their material prosperity, and that a continuation of the ladrone evil will brand them as wholly unfitted to receive anything further along the line of self-government. They also appear to realize that their sincere cooperation is necessary in order to maintain the present very satisfactory and steadily improving state of affairs.

During the entire year there has been absolute harmony between the scouts and constabulary. The work of the officers of the former organization has already been referred to, and it is only proper to add that the constabulary officers also have performed their arduous duties with most successful results. The senior inspectors of this district are of exceptional energy and ability, and to them is mainly due the present highly satisfactory general condition. My sincere thanks are extended to all the provincial boards and to most of the municipal officials for their sincere and unfailing cooperation, without which but little could have been accomplished.

Very respectfully,

H. H. BANDHOLTZ,
Colonel, U. S. Army, Assistant Chief,
Philippines Constabulary, Commanding.

The ADJUTANT-GENERAL,
Philippines Constabulary.

*Arms and ammunition on hand in the second district, Philippines constabulary,
June 30, 1905.*

Province.	Carbines.		Rifles.		Shotguns.		Revolvers.	
	Number.	Ammunition.	Number.	Ammunition.	Number.	Ammunition.	Number.	Ammunition.
Company A	72	4,600			6	75	16	1,950
Albay	185	2,130	36	1,860	67	5,000	257	1,150
Camarines	204	10,365		3,640	12	4,580	65	6,408
Masbate	51	8,628					82	3,079
Mindoro	118	9,457			22	702	52	1,843
Romblon	59	7,256					47	1,865
Sorsogon	133	8,940	6	1,500	18	1,005	98	7,907
Tayabas	333	8,363			57	856	145	2,896
Total	1,155	59,839	42	7,000	182	12,318	762	27,098

Number and kinds of arms in hands of the municipal police in the second constabulary district, June 30, 1905.

Province.	Arms.		Ammunition.	
	Rifles.	Revolvers.	Rifle.	Revolver.
Albay		10		200
Camarines		16		150
Masbate		7		100
Mindoro	11	12	200	140
Sorsogón	5	40	100	400
Tayabas		21		300
Total	16	116	300	1,290

Conditions as to brigandage, approximate number of ladrone bands operating, their strength in men and firearms, in the various provinces of the second constabulary district, July 1.

Province.	Outlaw bands.		Number of outlaws.		Number of firearms in hands of outlaws.		Conditions.	
	1904.	1905.	1904.	1905.	1904.	1905.	1904.	1905.
Albay	8	1	31	7	12	3	Fair	Very good.
Camarines	4	2	560	24	169	25	Bad	Do.
Masbate							Excellent ..	Excellent.
Mindoro	1	1	10	10	3	2	Good	Do.
Romblón	1				8		Very good ..	Do.
Sorsogón							Excellent ..	Do.
Tayabas	4	2	145	20	57	13	Fair	Do.
Total	13	6	744	61	211	43		

EXHIBIT 3.

REPORT OF THE OFFICER COMMANDING THIRD DISTRICT, PHILIPPINES CONSTABULARY.

HEADQUARTERS THIRD DISTRICT, PHILIPPINES CONSTABULARY,
Iloilo, July 19, 1905.

SIR: I have the honor to submit herewith report for the third district, Philippines Constabulary, for the year ending June 30, 1905.

The accompanying chronology, although not as complete in details as would be desired because of making this report too lengthy, will nevertheless indicate the more important events and the conditions in each province.

PALAWAN.

The province of Palawan, formerly Paragua, is now under the direct supervision of the chief of constabulary and administered from Manila.

ANTIQUE.

This is one of the poor provinces of the district and its commercial importance is small. The people are generally quiet and peaceful, but are subject to molestation by marauders from the outlying districts and of the mountains. These molestations take the form of petty thievery, which is better handled by municipal authorities, because of their acquaintance with the irresponsible and dangerous characters in their jurisdiction. The use of the constabulary in this province is solely to prevent the formation of any large band of outlaws and to respond to the call of the municipal authorities to pursue roving bands. The northern portion of the province is far removed from the civilizing effects of the commercial centers, and there is some feeling of sympathy between the

people of the towns and barrios and those of the outlying districts. The more intelligent and educated class of people and those owning property are somewhat timid because of fear of depredations of the ignorant and naturally lawless classes. If the towns where the constabulary are now stationed were capable of organizing and maintaining a reliable municipal police force, there would be no need of the constabulary in this province except at provincial headquarters. This, however, does not seem to me possible, although the provincial governor and others will probably not agree with me.

The Montesco chief, Ompong, surrendered to the provincial governor in the early part of last year, but some hitch having occurred in the surrender of all his arms, and there being evidences of faithlessness in controlling his people, Lieut. G. E. Barry of the constabulary went into the mountains to find him and to insure the behavior of the mountain people. As heretofore related, a fight ensued, in which both Ompong and Lieutenant Barry were killed. Lieutenant Barry bore a splendid reputation in the constabulary as being a brave and fearless officer, and the service could ill afford to lose him. This province has always been considered a quiet one, and there has been little change during the past few years.

CÁPIZ.

In a measure, the province of CápiZ is similar to that of Antique, and I believe the constabulary forces could be removed and arms intrusted to the municipal police of some of the towns, provided the senior inspector of constabulary was given control of the municipal police under the supervision of the provincial governor. Again a provincial governor does not agree with me, but as provincial governors are liable to change every two years, there may come one who would be willing to undertake the control of the province with the aid of a much smaller force of constabulary.

Julián Vertuoso, the only ladrone of any importance, surrendered to the provincial governor last fall, having been persistently pursued by the constabulary in his mountain retreats. The province is therefore free from the liability of raids by any bands of ladrones armed with firearms. Petty thieving occurs, but most of it is handled by the municipal authorities.

ILOILO.

In 1902 the conditions in Iloilo province were very bad; in fact, they were far worse than the American authorities realized. I say this because of the suddenness with which the stealing of carabaos commenced. There was no insurrection, nor indication of it, but there were hundreds of arms scattered throughout the province that were not known to the authorities. Some of these arms were in the hands of organized ladrones, who came from the mountains and returned there after every raid. Others were in the hands of the people living in the towns and barrios who banded themselves together at night to raid their neighbors. Stolen carabaos were killed for the market, but by far the larger proportion were sent to CápiZ or shipped to the island of Negros. The handling of these animals after being stolen was open, as municipal authorities readily gave credentials with little or no evidence of proper title. The demand in Negros for carabaos was such as to make the stealing most profitable to all concerned. The constabulary forces were increased month after month, until there were on duty at one time 350 men. Progress in tranquilizing the province and stopping the stealing of carabaos was really very rapid, but the work of getting in the guns and ferreting out criminals was slow and tedious. The past year has shown greater success in this latter work than in any year previous, and the cooperation between the constabulary, the people, and the municipal officials has been very marked. The admirable administration of Governor Melliza and the earnest aid which he has given the constabulary has been a most important factor in the work. I can freely state that the hearty assistance of the provincial governor is essential to peace in any province. Without it the constabulary, however strong and well officered, is seriously handicapped. There remain in the mountains the remnants of what was formerly well-organized and dangerous bands of brigands, each controlling some 10 or 15 guns. During the past year but one of these bands have been active, the other two having been fought to a standstill and forced to retreat far back into the mountains, where they have been only too glad to remain. They have repeatedly sent in word that they would surrender their arms if it were not for fear of injury from other bands. The

third band referred to as active is at present quite so in endeavoring to pick up the pieces, for Captain Lewis and Lieutenant Beazley had a fight with them in June, in which 11 ladrones out of some 15 or 20 were killed and 6 of their 14 rifles captured. In this fight was killed the son of Ladrone Chief Sano, who was easily the worst character in all the mountains and to whom is given the credit for heading most of the raids.

NEGROS (OCCIDENTAL AND ORIENTAL).

The provinces of Occidental and Oriental Negros can be treated as one. The island has a very large population of Spaniards and Spanish mestizos. Nearly every hacendero is possessed of rifles and shotguns, ranging in numbers from one to ten or a dozen. They are not to be relied upon as an adjunct to the constabulary or municipal police, for each hacendero looks out for his own first and the public welfare afterwards. There is no such thing, as we have in the States, of the people of a locality arming themselves to resist the raids of outlaws or to form a posse to go to the assistance of their neighbors or to aid municipal police or the constabulary. Ransom was paid in Spanish times to the mountain bands, and I do not doubt the same has occurred during American occupation by people who prefer to thus satisfy the bandits than to run the risk of having their plantations burned at night by a few sneaking individuals or raided by a large band. The danger will be considerable as long as these babaylanes are allowed to live in the mountains and isolated casitas beyond the influence of settled communities. Unless taken in the act they can not be convicted, as witnesses are difficult to obtain, and the constabulary can only hope to keep them down by obtaining information promptly of any raid, follow up, and strike the band before it can disperse. The only raid that has occurred in the island of Negros in the past year was that of about 40 babaylanes on the poblacion of Isabela on the 27th of June. At daybreak that morning the people of that town awakened to find it in the hands of this band. No previous information was had of its organization nor notice of its presence given by the municipal police nor other municipal official. It simply walked into the town and took possession while everyone was asleep. A native inspector of constabulary was in the town that night alone, and when he found what had occurred telephoned to the constabulary post about two hours distant. The band did no robbing nor looting, and retreated from the town on learning of the approach of the government forces. The constabulary pursued and the babaylanes dispersed, distributing themselves among the neighboring clearings or small farms, upon which many of them doubtless lived. It remains to be seen whether or not the people of Isabela will come forward and identify the raiders or aid in their capture. If they do, it will be unprecedented. Some of the more ignorant members of the band may be picked out and made to suffer for the leaders and more important ones. This is but an illustration of conditions in the Philippine Islands, and shows that the constabulary not only has to contend with the ladrone elements, but with a listless and diffident people. This band was at first supposed to be the remnants of that of the late Papa Islo, the chief of the mountain people of Negros, who was a bandit leader for twenty years and whose name placed fear in the hearts of people throughout the island. He was killed after a two and one-half days' pursuit in the mountains by Lieutenant Mohler, of Oriental Negros, in January of this year. The body was identified, and it is believed that identification was correct.

CEBÚ.

The province has witnessed this year the burning of two of its towns and several barrios by mountain bandits. The military were called upon to garrison Toledo and Naga. The senior inspector established a post of constabulary in the center of the most mountainous district and began systematic work to bring within its control some 4,000 or 5,000 people who had been subject to the sway of a ladrone chief named Quintin Tabal. These people are now gathered in 14 small barrios at distances of from two to six hours from the constabulary post, and are not only contented with their lot, but becoming more prosperous than some of their lowland neighbors. Each little barrio is surrounded by a stockade and located at a central point with reference to the land cultivated by its people. Each maintains a force of from 40 to 50 men, armed with bolos and spears and ever ready to make defense against any outlaws, and to aid the constabulary as volunteers, spies, and cargadores, for which work

they are paid. During the dry season, when these people were on the point of starving, Major Nevill found employment for a detachment from each barrio on the public works at Cebu sufficient to enable them to buy the necessities of life. These people have all been vaccinated by the provincial doctor, and all possess cedula purchased from the municipal treasurers of the towns to which each pertains. Since the establishment of this post of constabulary and the organization of these mountain people, Quintin Tabal and his ladrones have appeared but once in their midst. On that occasion the people of the barrio of Lapo-lapo went out at night, killed a leader of one of the parties, and drove off the rest. The policy of protecting these people, taking them out from under the sway of bandit chiefs, and aiding them, I respectfully submit for full investigation and as worthy of thought in the matter of controlling a densely ignorant and almost savage people. The conditions in every province of the Philippine Archipelago, as far as I know, are similar. Every outbreak that has occurred in this district during the past three years has been among this class of people. They are the ones who do the fighting, and who suffer the consequences. Means must be taken to control them and to raise them higher in a state of civilization, so that their natural inclination to thievery, robbery, murder, and arson, will be overcome.

BOHOL.

The province of Bohol is, as it has always been, quiet and peaceful, although poor.

LEYTE.

The constabulary of Leyte has suffered more than any other province through frequent changes of officers and in having but few capable ones. Had it not been for the well-organized municipal police and the loyalty of the people to Governor Borseth, the situation in Leyte might have been more serious. The central and southern part of this province has been very quiet and peaceful since the close of the insurrection. In the mountains of Ormoc the pulajan chief by the name of Papa Faustino has roamed about with a small band of followers, while in the lowlands about Jaro and Carigara an ordinary ladrone chief, Juan Tomayo, has lived off his friends, relatives, and enemies. Because of a shortage of competent junior officers in Leyte last fall, Faustino was enabled to build himself fortifications and to inaugurate a pulajan movement. Captain Barrett, the senior inspector of Leyte, took the field in search of Faustino's outfit, and in the fight which followed fell mortally wounded across the intrenchments. The lieutenant of constabulary with him has been dismissed from the service for abandoning the attack and retreating. The constabulary was in a bad way for a while and conditions were uncertain, but its prestige was finally reestablished in April of this year when Captain Grove, after an eight-day search, corraled most of Faustino's men in a blockhouse, killing eleven of them and capturing three guns. Juan Tomayo is reported, as this is being written, to have been killed by the police of Presidente Astorga, of Zumarraga, on the island of Buad, opposite Catbalogan, Samar, and the identification seems to be complete. The death of Captain Barrett was a severe blow to the constabulary, he being one of the most desirable and trustworthy officers of the service.

SÁMAR.

On July 1, 1904, the military forces of the government in garrison on the island of Samar consisted of one regimental post at Calbayog, a company of scouts on the north coast at Laguan. The constabulary was distributed as follows: 32 men on north coast at Catarman; 78 men on the east coast at Borongan; 10 men on the west coast at Calbiga; 80 men at Catbalogan, and 39 men on the south coast at Balangiga.

The pulajan band of Pedro de la Cruz, with 9 rifles and usually about 16 men, was the only one of any importance on the island. This band roved about in the center of the island from the headwaters of the Gándara Valley to the headwaters of the rivers running up from Dolores, Taft, and Borongan. A pulajan leader by the name of Anugar circulated in the Gándara Valley.

The name "pulajan" is applied to and accepted by all those who live in the sections mentioned. When any were overtaken or captured, they unhesitatingly owned that they were pulajanes, because they said all the people that

live in the mountains were known by that name. Many confessed pulajanes may never have joined with any band, for to them the name meant nothing more than to designate them as mountain people. In the fall of 1902, after the surrender of the insurgents on the island of Samar to the military authorities. Anugar and other less important leaders up the Gándara Valley addressed communications to people formerly identified with the insurgent cause, calling upon them to come again into the mountains and continue the fight against the Americans. They stated that they had not surrendered and never would, and that there were thousands of them to begin fighting at any time. Papa Pablo was their recognized "high chief" or "medicine man." As time went on the agitation of these leaders had no noticeable influence upon the island in general. It was known they were circulating in the mountains, and occasionally a small band of bolomen would be heard of passing through the country requiring food as they went. A post of constabulary was maintained at Bulao and a post of scouts at Gándara, and numerous actions occurred with these small bands from time to time. In February, 1904, De la Cruz made his appearance near Borongan, and Lieutenant McCrea, while scouting with his detachment of only 7 men, was defeated and killed by De la Cruz, who had collected a large number of bolomen. In this engagement the constabulary lost 4 guns and 3 men killed. A few days afterwards a detachment of scouts recovered the bodies of the killed and had an engagement with the same band, although no arms were recovered. This affair served to direct more attention to the pulajan question for a while, but information was lacking of any widespread movement. It appears, however, that De la Cruz became very active in the mountains in organizing bands in various places, although these bands did not assemble or commit any depredations. Information was meager, although detachments of constabulary operated freely, passing back and forth across the island. The line being quite distinctly drawn between the people of the towns and those of the mountains, information could not be obtained which would lead to the capture of the more important leaders. Traffic in hemp and other products was carried on as usual, mountain people circulating among the coast towns, and the people in the outlying barrios seemed without fear of molestation. The trouble was precipitated in the early part of July in the headwaters of the Gándara River by an attack by pulajanes, armed with rifles, upon several barrios. Houses were burned and several people killed. This outbreak had been attributed to several causes, one of which is imposition and unjust treatment by merchants and barrio officials. It was plainly evident that there was no movement aimed at the government of the islands, and that there were people in these mountain districts who did not sympathize with the leaders and agitators of the pulajanes. A force of constabulary went up the river to quell the disturbance, and the grievous mistake was made by the officer in command in detaching a force of 20 enlisted men under a native noncommissioned officer and placing them in the disturbed section. This detachment of constabulary was set upon by a large force of pulajanes, armed with bolos, and driven to the river, with a loss of 2 men killed and 8 guns. Most of the latter were lost in the river in the efforts of the constabulary to make their escape in canoes and were probably recovered by the pulajanes. The burning of several barrios and the killing of a number of people, together with the defeat of this detachment of constabulary, was the beginning of the present trouble in Samar. Reinforcements of the constabulary were sent up the Gándara River, and during the next month were successful in many small engagements with various bands of pulajanes. On the 21st of August a detachment of 13 constabulary escorting refugees down the river in baroto was fired into from the river bank. A severe fight followed, in which 8 men were killed and 11 guns lost. Captain Crockett heard the firing, and with his detachment of 15 constabulary was soon engaged in what proved to be a most sanguinary combat. Although with himself and 6 of his men seriously wounded, he defeated the pulajanes, killing 41 and capturing 4 guns. About this time the pulajan emissaries began their work in the vicinity of Catubig, in the northeast corner of the province. The uprising received further impetus on November 10 in the burning of the town of Orás and the killing of 13 scouts with the loss of their guns. The situation was made truly alarming and serious by the massacre of Lieutenant Hayt and his entire detachment of 47 scouts on the 15th of December. This one fight increased the number of arms in the hands of the pulajanes by 100 per cent. The American soldiers, scouts, and constabulary were then thrown into the island in large numbers, which put an end to the further burning of towns and barrios and the killing of

innocent people, although the armed pulajanes in the field received no severe blow until, on the 5th of June, Captain Stacy and his company of Twenty-first Infantry, Captain Taylor with his company of scouts, and Lieutenant Sulse of the constabulary as guide, worked their way through the woods and fell suddenly on the camp of the most famous of the pulajan leaders, Enrique de Dagajob, and administered severe punishment, killing Dagajob and nearly 100 of his men and capturing 8 carbines. The death of Dagajob virtually put an end to aggressive movements of the pulajanes of the great district of the north-east portion of Samar. The operations of the forces in the Gándara, on the coast directly to the east, and in the southern part of the island had in reality been somewhat without result. The pulajan bands there were inactive, and their retreats have not been found. On May 17 a detachment of 55 constabulary from the post of Mugtaon, situated about two days west of Borongan, made an expedition to the north, and after passing through a considerable area of heretofore unknown, cultivated fields attacked and burned the camp of the pulajanes of the murderous Teducduc. This action, although in itself not a very large one, as the force of pulajanes was small, resulted in stirring up the lawless elements and the discovery of large areas of cultivated fields and districts capable of maintaining several thousand people. In revenge for the assistance given the constabulary in this fight by the people of the coast barrio of Santo Niño, the pulajanes, on June 2, assaulted and burned the barrio, murdering 13 men, women, and children. Pursued by the military, they crossed over the island and appeared in the outlying barrios of Calbiga, Basey, and Balangiga, burning a few houses and killing several people. At the present writing these pulajanes are being pursued by the American soldiers, scouts, and constabulary.

In the latter part of May the military and scouts began to operate under the direct orders of the department commander, Brig. Gen. William H. Carter, U. S. Army, and the constabulary posts were relieved on the east coast.

Returning from leave of absence in March, it is not for me to refer to events previous to that date. Pulajan uprisings have heretofore required prompt and vigorous measures by an overwhelming force. In such times officers of experience and those in the field should be counseled with and their advice heeded. They should be supported and encouraged, for their life is not one of pleasantries nor gayety, but of continual hardship and subject to numerous dangers. An officer of constabulary who plunges into the jungle alone with his native contingent, to meet he knows not how large a force, goes because he feels duty bound to do the best with what he has, yet he may feel inwardly he is undertaking more than prudence would dictate. I have never yet heard of a case where a constabulary American officer has neglected to take the field promptly because of the thought that his force might be too small. The work of the constabulary in many provinces in the islands does not require trained men, but in one like Samar, Leyte, or Cebu the best disciplined and most experienced are necessary. I am not blind to the defects of our organization; but, recognizing them, believe in a policy of prudence when careful consideration of all facts so indicate. The American soldier is in these islands to support the civil government, and it is not an indication of weakness nor of inefficiency to ask such support when results can be thereby obtained more quickly. Success in warfare primarily depends on who can put the largest force in the field and put it there first. If that were our maxim—it is mine—I believe the tranquillity of these islands would be guaranteed. The moral effect of the sudden appearance of a large force, composed of the various military branches of the government, is hard to imagine by one unfamiliar with conditions by reason of not being in daily touch with the masses. The constabulary is not prepared to cope with large problems. It has neither enough officers nor proper equipment. It can not be brought to the high state of discipline necessary unless officers of training and experience can be obtained in sufficient numbers. The loss of any one should not be noticeable. The laws contemplate calling upon the military when necessary, yet there has as yet been no recognition of the constabulary as the militia of the islands. It should be so, for the two forces can not act together with any reasonable chance of success unless relative rank be recognized. The force of constabulary is barely sufficient to control the lawless element in normal times, hence the withdrawal of detachments from several provinces to reinforce one in case of a sudden outbreak jeopardizes the tranquillity of those provinces weakened. Another point of really great importance, yet little considered, is that the native troops from distant provinces are looked upon more as invaders than supporters of the law and order, and their petty acts and

abuses arouse a feeling of bitterness and enmity, even among those people who would give aid and support to the local constabulary. The aid of the military will be required from time to time for many years, and the relative status of military, scouts, and constabulary should be established by law. However, when in the same province each organization should remain under the command of its proper chief; when joined together in an expedition the senior officer present should command. As conditions in the islands warrant at times a declaration of martial law, there would be far less confusion and more chance of success if the suspension of the writ of habeas corpus were made to apply only to arrests made by the armed branches of the government and the recognition of the constabulary as one of those branches. The future will not be without its outbreaks. We have already learned many lessons, and among them is that people living in almost inaccessible sections and in a state of abject savagery must be met with system and be governed as their state and condition demands.

A FILIPINO PROBLEM.

The experience of the constabulary in attempting to put down lawlessness has been sufficient to warrant its officers speaking authoritatively on measures necessary to insure tranquillity in certain sections. Steady progress has been made in all provinces and brigandage of a serious character is now confined to a very few, although the peace of some is dependent upon the maintenance of a considerable force of constabulary, assisted by garrisons of scouts and military. The question is not unlike the problem confronting America in the subjugation of the Indian tribes in the Western States. It is not solely one of killing and capturing the leaders or great numbers of their followers, for there are others ready to rise in their places. We must go deeper into the problem and ascertain the preventive rather than the cure. This involves a study of the conditions which make possible sudden and frequent outbreaks. There is no question but the great majority of the people desire to live in peace. Many are in reality driven to unite themselves with marauding bands. Lawlessness on a large scale can be divided into two classes—that of ordinary ladrones or robbers, whose operations are against the property of individuals, and that of the pulajanés, who aim at the destruction of society and government in all its forms. The remedy, therefore, lies in the establishment of society on so firm a basis that the depredations committed by small bands can not disrupt it and cause the members to break away from its influence and join the murderous raids upon neighboring settlements. The remedy is not with the armed forces of the government but with the legislative power thereof. The people of the towns and settled communities have in most instances been found fitted to receive the benefits granted by existing laws and to enjoy in a great measure such rights and benefits as do the people of the United States. This is not true, in my opinion, of the people who live in distant country districts, and even less of those who live in the mountain fastnesses. It may be said that there is a distinct line between the people of the mountains and those of the towns; the former avoid making themselves subject to municipal or insular laws and are easily led to lawless acts in retaliation for real or fancied abuses on the part of municipal officials and town residents. Nothing but the maintenance of many garrisons of government forces will prevent these disorders, unless the government meets the issue squarely and recognizes that laws suitable to the people of prosperous and enlightened communities can not be applicable to mountain people. Lawless bands have their beginning among the people living beyond the control of municipal or higher authorities. They are recruited first from those who live in isolated casitas, and who for many years have preferred a semisavage and independent existence to one in organized communities. Recognizing only the law of force, they respect the government or the bandit forces according as to which are the more constantly predominant. If the spirit of revolt and insurrection be active in the settled districts, the leaders will find in the mountain people an element capable of precipitating an extensive political movement. Familiarity with the past history of the islands will not contradict this statement. If these people can be controlled, the central government will not only be protecting its lesser governments, but indirectly insuring its own tranquil existence. The protection to the towns and the preservation of law and order will be more certain by the organization of the mountain people into civic communities, requiring every individual to identify himself with one and to construct his house and

live on a location designated. Individual families, living as they do in widely separated casitas, are subject to the power of small roving bands, furnishing them with food, shelter, and recruits. Forty or fifty families grouped together in a compact barrio will be able to make successful resistance until assistance could come from the nearest garrison. Such communities, under the protection and control of the government forces, would make ready progress intellectually and commercially. The products of the soil stored within the barrio would be saved from the depredatory bands. The ardor of those inclined to lawlessness would be considerably dampened, for, with a stockade around the barrio, there would be no way for the bands to find food or shelter except by passing through the main gate and within the observation of the headmen of the barrio. Well-defined trails, which now do not exist, would be established between the barrios and the center of trade. Acts of unscrupulous merchants and corrupt or abusive officials would be the more readily exposed. It is believed that the policy of organizing these people into self-sustaining civic communities would find ready support among municipal officials and the more intelligent of those directly interested. Among the opponents of such a policy would be found those who would fear the loss of power and prestige heretofore maintained at the expense and to the detriment of a people already living a miserable and pitiable existence. The policy above outlined has, in a measure, been followed in two provinces of this district for the past two years with marked success. It has been brought about by the purely voluntary acquiescence of the mountain people themselves. In fact, it was they who first proposed it, stating that with bandits on one side and abusive municipal officials on the other there was no one they could look to for protection. They also stated that if the constabulary would establish a post in their midst and give them the necessary aid and protection there would be no more trouble in that section. The people who have actually suffered are the ones who more readily accept this view of the situation, and I respectfully submit as an example and recommend an investigation into the conditions now existing in those barrios about the constabulary post of Dolores, in the province of Leyte, and of Camp Walker, in the province of Cebú. The outlying barrios of the town of Catarman, in the province of Samar, have never suffered from the inroads of the pulajanes, yet the majority of the people have, with the aid of the constabulary, organized themselves for mutual protection, following a somewhat similar policy. The people inhabiting the sections of Cebú and Leyte referred to were formerly outlaws and pulajanes, and have a number of times in the past two years proved their loyalty to the government and their opposition to all forms of lawlessness. It will be plainly a restriction of the liberty of the individual to prohibit him building his abode outside prescribed limits; but it should be recognized that men so low in the depths of ignorance, being, as they are, a constant menace to society, are not fit to enjoy the same liberty as those of the same blood who are under the influence of civilization. Force of arms first brought the Japanese to respect the law of civilized nations. The same is partially true with regard to the American Indian, and I am quite sure that such a policy as herein outlined will find active supporters among intelligent Filipinos. I wish to state in passing, it is my firm belief that the government can gain the confidence and loyalty of these ignorant people by giving them proper protection and aiding them to improve their social conditions. They are the class of people of these islands who need to be uplifted and not annihilated.

Respectfully submitted.

WALLACE C. TAYLOR,

Colonel and Assistant Chief, Philippines Constabulary, Commanding.

THE ADJUTANT-GENERAL,

Philippines Constabulary.

Cases treated and cures effected in constabulary hospital at Iloilo for the fiscal year 1905.

	Number.		Number.
Cases treated for disease	167	Other operations:	
Cases treated for wounds and injuries	28	Successful	7
Deaths from disease	5	Unsuccessful	0
Deaths from wounds and injuries	0	Cures, sickness, disease, wounds, and	
Amputations:		injuries	152
Successful	1	Disability discharges	10
Unsuccessful	0		

Work accomplished by the subdivision of information for the fiscal year 1905.

Arrests	210	Convictions, etc.—Continued.	
Convictions under various charges:		Unlicensed firearms	31
For bandolerismo	38	Falsification of public docu-	
For encubridor of ladrones	12	ments	2
Robbery in band	20	Total	138
Robbery	7		
Robbery and murder	1	Sentences:	
Robbery and arson	7	Death	3
Robbery in band and murder	2	Life	1
Homicide	2	Total number of years	1, 196
Falsification of government		Total amount of fines	P3, 174
documents	1	Property recovered:	
Resisting government authori-		Carabaos	42
ties	2	Vacas	1
Theft	6	Value of personal effects	P250
False testimony	1	Firearms captured	34
Infraction of Act No. 1147	5		
Estafa	1		

Miscellaneous statement of the work accomplished in the third constabulary district.

	Province.									
	Antique.	Bohol.	Cápiz.	Cebd.	Iloilo.	Leyte.	Occidental Negros.	Oriental Negros.	Sámar.	Total.
Engagements	7		2	31	40	17	8	6	41	152
Outlaws killed	15		5	126	66	40	11	34	705	1,002
Wounded	3			7	21	1		1	235	268
Captured	36		3	136	81	69	32	75	87	519
Deserters apprehended		2		4			1		1	8
Prisoners in the provincial jail	32	14	157	205	87	166	61	61	88	871
Sentenced to more than two years	14		35	96	100	18	6	3	7	279
Sentenced to less than two years	6	14	106	66	364	58	23	6	18	700
Sent to Bilibid	12	10	26	133	107	90	10	15		403
Miles of telegraph and telephone line	64	100	85	211	270	134	132	118	178	1,940
Military posts				3	2	2			17	24
Constabulary posts:										
Permanent	4	1	4	6	9	6	6	4	4	44
Temporary	1				2			1		4
Arms lost:										
Rifles					1	1				2
Carbines					2				27	29
Shotguns							1		2	3
Revolvers									3	3
Arms captured and recovered:										
Rifles			8		23		2			33
Carbines						2			9	11
Shotguns			3		74	2				79
Revolvers			6	8	28	2	2		3	49
Composition					6	9				15
Cannons						3				3
Unclassified				21					1	22

Constabulary casualties, by provinces, for the fiscal year 1905, compared with same for fiscal year 1904.

	Antique.		Bohol.		Cápiz.		Cebú.		Iloilo.	
	1904.	1905.	1904.	1905.	1904.	1905.	1904.	1905.	1904.	1905.
Killed, officers and men				1	1		2	1	2	2
Wounded		1					(?)	1	(?)	3
Deaths	2	3	2		3		4	3	6	8
Desertions							4	5	1	1
Marked sick	(?)	119	(?)	24	(?)	174	(?)	204	(?)	355
Treated in hospital	(?)	10	(?)	1	(?)	6	(?)	72	(?)	151

	Leyte.		Negros, Oc- cidental.		Negros, Oriental.		Sámar.		Iloilo Bat- talion.		Totals.	
	1904.	1905.	1904.	1905.	1904.	1905.	1904.	1905.	1904.	1905.	1904.	1905.
Killed, officers and men	5	3					4	21			14	28
Wounded	(?)	1	(?)		(?)		(?)	17	(?)		(?)	23
Deaths	13	1	7	5	5	3	7	2		1	49	26
Desertions	1			2	1		4	1		2	11	11
Marked sick	(?)	19	(?)	317	(?)	112	(?)	136	(?)	107	733	1,567
Treated in hospital	(?)	8	(?)	34	(?)	2	(?)	17	(?)	70	127	375

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 97

EXHIBIT 4.

REPORT OF THE OFFICER COMMANDING THE FOURTH DISTRICT, PHILIPPINES
CONSTABULARY.

HEADQUARTERS FOURTH DISTRICT, PHILIPPINES CONSTABULARY,
Vigan, P. I., July 1, 1905.

SIR: I have the honor to submit the following report for the fourth district, Philippines Constabulary, for the fiscal year ending June 30, 1905:

Per Special Order No. 43, series 1905, Maj. Samuel D. Crawford assumed command of the fourth constabulary district, comprising the provinces of Ilocos Norte, Ilocos Sur, Abra, La Unión, Benguet, Lepanto-Bontoc, Cagayan, and Isabela, with headquarters at Vigan, relieving Maj. Thomas I. Mair March 29, 1905.

In the absence of the district adjutant, First Lieut. Edward Hartrum has been acting adjutant.

Coming into the district during the closing days of March has prevented the district chief from covering his territory, and he will therefore be obliged to depend to a great extent upon reports of the senior inspectors and other officers for material.

The month of April was spent largely between Vigan and Laoag visiting municipal officials, but principally getting the McGeachin affair at Laoag and its attendant embarrassments straightened out. It is believed that the event has been well-nigh forgotten in Ilocos Norte and that diplomatic handling will entirely eradicate all ill feeling or prejudice that may have been engendered. Indeed it may be said that the relations which exist between the officers of the constabulary and the provincial officials in the entire district are most amicable. Even in La Unión, where there has been some controversy over control of the police, there is no evidence of a personal ill feeling between the provincial officials and those of the constabulary. It may be safely stated that there is a mutual respect and confidence existing everywhere between provincial and constabulary officials in this district.

It has been observed that constabulary officers and enlisted men have taken well to heart the admonitions promulgated in Circular No. 13, headquarters Philippines Constabulary, 1904. The aforesaid circular was supplemented by a district circular June 21, 1905, and which is as follows:

[Circular No. 12.]

HEADQUARTERS FOURTH DISTRICT, PHILIPPINES CONSTABULARY,
Vigan, June 21, 1905.

In consequence of personal observations made by the district chief and advice received from several quarters, it has been deemed necessary for the better discipline of the constabulary that a circular of reminders or admonitions be issued for the information and benefit of all officers in the fourth district.

(1) Senior inspectors must curtail or jealously guard the authority which it has been customary to place in the hands of noncommissioned officers. The reports of abuses committed by the enlisted men, whether true or not, are a too frequent occurrence, and all tend to work up, if not active opposition on the part of municipal officials and the public, at least a feeling of apathy, which withdraws their moral support and creates a secret opposition to the constabulary.

(2) If, by reason of lack of officers, it is necessary to send detachments under noncommissioned officers to make patrols or serve warrants, the officers sending such will make a very careful investigation into the results of such movements with reference to the conduct of such detachments in addition to requiring a written report by the noncommissioned officer responsible for the expedition. Commanding officers will verify the written reports by private inquiry at the first opportunity.

(3) Officers sending out detachments beyond a meal's distance must invariably ration the detachment with cash. Detachments sent out without money or rations invariably importune the barrio people for food, and while it may in many cases be given with utmost good will, it is nevertheless an imposition upon the hospitality of the people who, as a rule, can ill afford to give away their food supplies. A case in point arises in a province where a patrol has

been maintained as a protection to the people on the trails. The presidente of one of the towns along the route patrolled refuses to serve longer because the patrol requires him to furnish it with food without remuneration, and while he has complied with the demands of the constabulary, he did so because of fear. Such conduct as that referred to in the case cited, when permitted to continue without the action on the part of the commanding officer, will be made the foundation of charges against such commanding officer to higher authority for neglect of duty.

(4) The scarcity of officers in this district has undoubtedly greatly overtaxed many of the new officers left on duty and is more or less a reasonable excuse for intrusting otherwise too important details to noncommissioned officers. This condition should, however, be a spur to a more exacting surveillance of the work of enlisted men. It is seldom that a complaint from the people is absolutely without foundation. There is almost invariably a lapse from strict discipline or an overt act upon which the reclama is based.

(5) Complaint is made in one province in this district that the members of the constabulary force purchase food supplies from barrio people at prices below the market price or the value held by the vender. This practice must be strictly prohibited. The vender of an article has absolute control over his goods until he parts with them at his own free will and at a price agreeable to him. Violations of this order must be met by summary court, as it is a species of extortion.

(6) Another complaint has been made by members of a social club that constabulary soldiers have been giving annoyance by presuming that their uniform gave them a right to enter the club premises without an invitation. Such conduct is impudence of the most provoking character and an unwarranted assumption that must not prevail in any quarter. Inspectors and detachment commanders must iron out the conduct of their men and make them the willing, orderly, honest servants of the government, and the false and mischievous notions that they are higher than, or are the masters of, the people must be eliminated in order that the service be irreproachable and the confidence of the people be secured and held.

(7) Detachment commanders in the field, and particularly in Igorot or Tinguiane sections, will not accept presents of rice, chickens, eggs, or other articles without returning an equivalent either in barter or money. Recent observations show that the gifts made and accepted as such by a detachment commander from Igorots were meant as a price of good will. While not intended as an abuse of authority, much harm was done in a case in point.

(8) Liberal provisions have been made for diversion and entertainment of the men of the constabulary, and a very strict surveillance should be exercised over their daily conduct in and about their stations, and all lounging about canteens, tiendas, billiard rooms, and general loafing resorts should be strictly prohibited.

Where it is possible commanding officers should permit their married men to build houses or general quarters for their families on garrison grounds, sufficiently distant as not to interfere with discipline or endanger Government property. Such quarters must not be made the resort for other than the families of the enlisted men of the constabulary. It is believed that the good sense and judgment of officers can handle and efficiently discipline the constabulary of this district and keep it above adverse public or press criticism. The earnest and conscientious efforts of all officers of constabulary are invoked in behalf of an insular service that will be acceptable to the public, and will be worthy of the approval of the chief of Philippines Constabulary and the insular government.

By order of Major Crawford:

EDWARD HARTRUM,
First Lieutenant, Acting Adjutant.

The month of May and most of June was spent by the district chief in the Igorot country, and this expedition, which it was intended should enter all disturbed sections, was ended by the setting in of the rainy season, which made travel in the mountains impossible. Much good resulted, however, for the expedition certainly occupied a part of the season which in the past has been marked by more or less head taking. Many of the weaker rancherías were encouraged to rely upon the authorities to right their wrongs; offending rancherías were cautioned with significant admonitions, and in many instances long-standing feuds were buried beneath peace negotiations.

Sufficient was learned upon this expedition to determine a policy of frequent constabulary expeditions in the future among the Igorot, especially in the notorious head-hunting sections. The operations of the constabulary upon the aforesaid occasion were not bellicose in character, but were in all acts and demonstrations on contrary lines.

Many of the Igorot chiefs were pleased with the display of governmental authority, as such demonstrations give them an excuse to stop the old-time crop custom of taking heads to propitiate "Anitos," and their warlike young men who find it difficult to contain themselves, perceived the opportunity offered, and which will serve as a vent for the escape of their exuberance. They can join the constabulary; once in the constabulary they yield admirably to discipline and make splendid soldiers.

The erection of cuartels in the Igorot country portends to much usefulness. In addition to making for tranquillity it has already led to the reclaiming of former sementeras in Abra, deserted because of raids by Alsados and insecurity of life and property incident to that class of lawlessness. The tranquillity which prevails in the entire Ilocano belt will make it possible to use the constabulary of both Ilocos Norte and Sur largely in the interior, without prejudice to the lower sections.

Special efforts are being made by the district chief to impress the municipal authorities with the necessity of selecting policemen who will dignify that service by jealously guarding the public peace and good order, and who will refrain from abusing their authority. The predeliction of native policemen to make display of authority to the extent of harassing the common people is as marked in this district as it is in many other sections. That matter is and will be a subject for much attention, and reforms will be sought through municipal authority and cause no irritation.

POLITICAL CONDITIONS.

But for the circulation of Manila native papers in Ilocos Sur and Norte, Independencia would seldom be mentioned. A representative of this office made this the subject of inquiry and the result of this investigation was that there is absolutely no deep general conviction in the Ilocos country over independence.

When the subject was raised many Ilocanos observed in a quiet way that independence meant that it would be a rule by political agitators, and that they, the Ilocanos, had had one experience of that kind, and it was enough. They said that but for the Manilaites there would have been no insurrection in the Ilocano country; that the agitators and their followers had robbed the people, interfered with their women, and had otherwise deported themselves in an unseemly manner for persons who made pretensions to patriotism.

From all present indications it is not too strong to say that there is absolutely no danger of any general political movement in the Ilocano country against the government as it is at present constituted.

The absolute acquiescence of the Ilocano people and cheerful acceptance of the present form of government is in itself a strong guaranty for the future. It is regrettable, however, to note a lack of public interest and spirit in the pueblos which were formerly distinct municipalities, but are now merged into other jurisdictions. In all such pueblos the old tribunal is either in ruins or is going that way, except where it is occupied by the school department.

This spirit of resignation to superior mandate has its attendant drawbacks. The general improvement in agricultural conditions will no doubt bridge over and iron out all obstacles to reconstruction.

SCHISMS.

The religious agitation which created considerable feeling in Ilocos Norte and Ilocos Sur a year ago has settled down, and, while there are, perhaps just as many Aglipaynos or Independent Church adherents, and possibly many more, the people look upon the new schism as having settled in their midst, and a spirit of toleration is quite manifest. There is no longer open wrangling and public evidence of heart burnings.

Laoag's Aglipayno padre has made his submission to the mother church; San Nicolás clamatitos do not speak when they pass, but as for the rest of the Ilocano belt, the sects mix affably at all social functions. Candon on its feast day had for its principal attraction Archbishop Aglipay, and a more American-appearing town of its size could hardly be found in the United States on a festal

day. Every flag bore at the head of its staff a bouquet of flowers, and banners of national colors decorated almost every house front. The Romans and Aglipaynos joined in the civil celebration, and it passed with great eclat.

Archbishop Aglipay on his recent trip moved among his people quietly and in good taste. The Badoc padre (Independente) stated that Aglipay traveled nights, fearing assassination. There is certainly no feeling of hostility in the Ilocano belt that would jeopardize the safety of any religious leader who conducted himself with any degree of prudence.

The Roman Catholic Church organization in Vigan is very actively sustaining its old-time prestige, and the masses at the cathedral are very largely attended. Right Reverend Bishop Dougherty has added very materially to the educational advantages of his diocese.

The seminary for young women, presided over by sisters of one of the churches' religious orders, is attracting to its halls of learning many of the young women of the Ilocano belt. The citizens of Vigan responded with characteristic liberality to appeals for means with which to put the Sisters' Academy in order. The comforts of the institution, the superb advantages for polite and practical learning offered by the sisters portends to a highly prosperous career for their institution. The academy for the education and training of boys for religious lives is likewise well attended.

The recently completed public high school, certainly the best structure for school purposes in the islands, has a very large attendance. The girls' dormitory, an adjunct of the high school for the benefit of out-of-town girl students, ably presided over by Miss Clendennin, furnishes a haven and attractive home to the many energetic young women who aspire to higher education.

The common schools throughout the district in many instances exceed the capacity and accommodations in attendance. The American language is used by Tagalog commerciantes and others who can not speak Ilocano, and is with the present generation what the Spanish language was formerly between the ilustrados in their communication with other than their own idiomatc divisions.

Ilocos Norte leads all other provinces in educational enthusiasm, and Superintendent Van Schalck, who is a man of great intensity of purpose and extensive resources, has added a large number of attractive schoolhouses, all of which are filled daily.

The spirit of education has seized on the Tingulane and Igorot tribes, and wherever advantages are offered acceptance is prompt and spontaneous. The general superintendent of education has promised additional teachers for the Igorot when available.

RATION SYSTEM.

The ration system is working successfully everywhere and is perfectly understood by the men. The men see and enjoy the benefits of the system. They find themselves furnished with cots, mosquito bars, wash pans, tableware, plates, and cups for both garrison and field; they see their mess enhanced by purchases from the commissary as well as from the open market; they find themselves supplied with the means for promoting recreation and for physical development. Their wishes have very properly been consulted by commanding officers when all these benefits were procured, and they know that frugality and economical expenditure of their mess funds have secured all these benefits, and they are contented, happy, and healthful.

The men themselves are constantly on the look for advantageous purchases of supplies, and while they reap material benefits by their frugality in the constabulary they are being trained in the practice of economy that can not be lost in their lives when they leave the service. The forms used in the third district are being introduced in the fourth district, and are readily understood by the officers.

STATE OF CONSTABULARY.

The authorized strength of the fourth district is 950 and the enlisted strength is 820. Of these 200 are on detached service in Samar, Batangas, and Cavite. The working force is low, but fortunately peaceful conditions have enabled the present strength to get along without accident.

The scarcity of officers has been the most serious drawback, and expeditions, in instances where there should have been greater activity on the part of the constabulary, have not been made as a matter of prudence. The prestige of the government and of the constabulary among the mountain people is a matter of delicacy and can not be intrusted to enlisted men or inexperienced officers.

As a rule the discipline of the constabulary is excellent, and there is no question but what the proposed reorganization, with the ample supply of officers contemplated, will fully cope with conditions in the fourth district.

It is the policy of the district chief to get the constabulary away from congested centers and isolate it, both for discipline and economy. As a rule the officers in this district are zealous in their work, are ambitious to reflect credit upon the service, and to give the government and people the returns for which the scheme was devised by its promoters.

As a matter of economy in the way of reducing of rents many changes are being made. The district chief has the active support of Captain Lovejoy, senior inspector of Ilocos Sur and Abra, in the initiative, and the next quarterly report will unquestionably show a marked difference in the amounts paid out for rents. It is hoped that eventually the constabulary in the fourth district may be entirely beneath its own roofs or occupying with little or no expense provincial buildings not longer needed for municipal purposes.

Eventually the district chief purposes to ask for a small steamer, the size of the *Sultana*, of Iloilo, for use on the coast during the open season as a matter of economy and expediency.

Steps are being taken to salve a good supply of fuel, abandoned at Salamogue by the military, for use in the steamer which, it is hoped, the government may place in this district.

ORGANIZED LADRONES.

BANDOLERISMO DOES NOT EXIST IN THIS DISTRICT.

Organized ladronism, or bandolerismo, does not exist in the fourth district in the sense that has been the disturbing element of other constabulary districts. This subject is segregated from the provincial reports and is made special, that the condition may be clearly outlined.

That definite information might be obtained on this subject the following circular letter was addressed to all senior inspectors:

"The assistant chief, commanding the district, directs that you report to these headquarters at your earliest convenience the names of ladrones or outlaw leaders in your province, the approximate number and kind of arms in their possession, and the number of permanent numbers each band is supposed to control. Also indicate the territory occupied by the aforesaid bands. State in this connection if the numbers of leaders and bands have increased or diminished within the past year. State whether the bands are religious, political, or for plunder only. Also give the number of outlaws killed and captured in the past year."

To the above inquiry the senior inspectors reported as follows:

La Unión.—"I have the honor to report that no organized bands of ladrones exist in this province."

Lepanto-Bontoc.—"I have the honor to report that no ladrones, outlaws, or Pulajan leaders are known to be in the province of Lepanto-Bontoc, or have been in the province during the past year. No outlaws were killed or captured during the past year."

Cagayán.—"At present this province is free from ladronism, and no arms out in hands of outlaws. However, there are a few arms scattered among the non-Christian tribes, called Calingas. In June last year an entire band of ladrones, consisting of six persons, were captured and are now serving sentence in Bilibid."

Ilocos Norte.—"There are no organized bands of ladrones or pulahanes in this province, nor any leaders of such bands, and the only outlaws that have come to my notice within the last year is a band I captured near San Miguel, consisting of 7 men and 2 guns. These men are now in jail and I am in possession of the arms. There has been none killed."

Ilocos Sur-Abra.—"A thorough search of the records of this province fails to show that there are positively any armed and organized ladrones within its limits. Rumor gives it that one Guzman lives in the mountains of Abra and Ilocos Sur, in the vicinity of Villavieja, and that he has 7 guns, but this man has not been heard of for more than a year, and I believe he and his have gone farther south. There have been no outlaws killed or captured in Ilocos Sur in the past year, but a band of Alsados or head-hunters, were reported killed in Abra. These head-hunters are the only outlaw element now giving us any trouble."

Isabela.—"Since the capture and surrender of Tomines and Sibley and their bands last year there has been no armed band in the province of Isabela."

"I have the honor to attach herewith a list giving names of outlaws and their assistants killed or captured during the past year." (Then followed the names of 130 persons.)

Benguet.—"Up to the present no reports of regular organized bands of outlaws have been received in this office as existing in the province of Benguet. The Igorrotes of this province commit depredations for vengeance's sake only. They do not travel in bands nor are they an organized body. The idea of the Igorrote is to get even with anybody who in any way abuses or underpays him, and I am sorry to say the Americans here are more often guilty of this abuse than are the natives, and for this reason quite a number of Americans have been prosecuted by the provincial governor and the justices of the peace. The Igorrote will steal from his fellow-man when the former has first stolen or otherwise caused a loss to him. Pulahanes are unknown in this province, i. e., from what information I am able to gather. No real outlaws were captured during the last year in this province, i. e., people who travel in organized bands. No outlaws were killed."

CATTLE STEALING.

A desultory custom of animal stealing is common in this district, but is falling off, as the constabulary has been active in suppressing the evil. The compulsory marking of animals will greatly assist in the pursuit and recovery of horses and cattle and will certainly have a deterring effect upon the custom. The district chief has formed an opinion that many Christians, and that classification includes some Americans, have not been overexact in their demands for evidence of rightful possession of animals offered for sale, when dealing with members of the non-Christian tribes, and their fear of wounding the sensibilities of the non-Christians may have encouraged illegal traffic. It is mentioned in passing that instructions have been given out on this subject.

BENGUET.

DISPOSITION OF OFFICERS ; CONDITIONS IN THE PROVINCE.

This province has no internal dissensions to mar its tranquillity. The trouble over collection of taxes from the Igorrote last year did not amount to a general revolt, and the presence of the constabulary early in the collecting period ended all opposition. The only serious disturbances during the year were the killing of an American negro by another and the murder of a Japanese by a native, both incident to quarrels among themselves as employees of the Benguet road.

During the month of May the senior inspector had occasion to run down and punish a small band of raiders who had helped themselves to some live stock belonging to neighbors, but all of which was recovered.

Beri-beri has caused a great deal of trouble with the Benguet constabulary during the fall and summer of 1904. The affection was so general that the effective working force was exceedingly small, and a less energetic, practical man than Lieutenant Diederich proved himself to be would not have been able to have met the exigencies of the service as he did.

The expiration of enlistment of many of the men in Benguet, along with the interference caused by beri-beri, has not produced many English speaking soldiers in the Benguet constabulary.

The senior inspector reports ₱250.08 mess savings, and the purchase during the last quarter of pots, field range, slickers, and rope-soled shoes for his men from mess savings.

Among the natives of Benguet there has been considerable smallpox, also some typhoid fever. Among the animals there was considerable glanders early in the fiscal year; later rinderpest and several cases of anthrax. During the latter part of the year the mortality among animals was not great.

Lieutenant Diederich in his annual report says:

"Crops were never better than during this year, although some damage was done by drought during the months of January and February, 1905. It is quite true that the drought did some damage, but not near as much as did the frost in January, especially to the camotes."

Internal revenue has not caused any trouble or hard feeling.

"There were more products raised during this year than for several years past, possibly due to the land registration law and also to the clear land title question. For this reason at least 50 per cent more ground is worked than last year; the gain in the culture of coffee has increased by 15 per cent.

"In the province of Benguet there are three distinct tribes of Igorrotes—the Imbalay, the largest; next the Cancanays, next the Waks, the latter being inhabitants of the Kayapa district. The three named tribes are all on friendly terms with each other, and there is no reason to believe that they are not; these three tribes have a credit deposited with the provincial treasurer; a round total of this credit is about ₱8,000. There are no municipal police in this province."

CAGAYÁN.

Captain Knauber, senior inspector of Cagayán, has been giving his province a strenuous service that knows no hours or seasons for activity. In consequence the men who had been handling mavericks have been troubled with insomnia of late.

Municipal officers implicated with carabao thieves in the early part of the year have been suspended and have been hauled before the court of first instance.

Improvements and extension of agricultural interests goes on apace, and the hundreds of thousands of maguey plants and coconanut groves will speak in silver tongues in the not distant future for the industrious projectors.

The enlisted men's mess, in debt when Captain Knauber took command of the province, now has a balance of ₱239.76, and the men are well fed and contented. The purchase of mosquito bars, etc., has been authorized. In schools; three times weekly, the General Orders for Sentinels and duties of a soldier are taught, and practice in map making, with good results, are noted as the training. Notes taken on practice marches and expeditions; official communications; preparation of cases for court are also in the course.

A band of 20 pieces (borrowed instruments) gives concerts of much musical merit, and contributes a military air to the constabulary functions.

The people of Cagayán are free from contagion. Since the loss of 250 animals by rinderpest, in June, in a barrio near Tugugarao, such measures were taken as prevented spread of the disease.

Captain Knauber tells this story of conditions in his province:

"The ranches and towns of the Cagayán Valley are mostly settled by Ilocanos, who every year are making themselves politically and industrially more and more important. The section pertaining to the jurisdiction of Aparri is almost exclusively occupied by people coming from Ilocos Sur. They are industrious and a peace-loving people as communities, hardly having passed the colonial stage of development. Their products consist mostly of rice, corn, and nipa. However, grasshoppers have demolished the rice and corn fields, with a total loss of rice and corn crop of that part of the province. The principal agricultural product of this province is tobacco. The average income, according to information, amounts to about ₱4,000,000 yearly in the Cagayán Valley.

"This year's crop is very poor for the lack of rain during the months of January, February, March, and April. It seems strange that with this continued income the people are, generally speaking, in a poor financial condition, living mostly on corn and gulay.

"With the enforcement of the internal-revenue laws, the distilling of vino was discontinued, as the revenue officer has caused some people who had tried to evade the revenue tax some restless nights. However, the revenue officer seems to have the situation well in hand. All stills have been reopened, and more economical methods have come into use and less evil effects upon morality. The internal-revenue tax in Cagayan province will average ₱15,000 monthly.

"There is, apparently, no ill feeling in religious circles, although a few Aglipayanos are running through the valley with very little success among the Ibanag tribe.

"The relations between the Christians and non-Christian (Calinga) tribes continue to remain a serious problem and a great hindrance to the proper development of certain sections. However, steps have been taken to establish friendly relations. It is well known that some of the town people lay for the Calingas to bring in their products and then take them away from them, sometimes paying them a small price, but more often robbing them of same, and it is natural the Calinga would retaliate when the opportunity is offered. Frequent expeditions have been made by the constabulary through the Calinga districts. The different Calinga tribes are all on friendly terms with the government. This was practically brought about by the Apayao expedition made in February and the Tubic expedition made in May of this year.

"The municipal police of this province consists of 3 lieutenants, 21 sergeants, 21 corporals, and 163 privates, making a total of 213. In an emergency this entire force, with the exception of the Batanes, can be assembled on very short notice. One hundred and thirty-eight revolvers and 1,550 rounds of ammunition are distributed among them. This organization has been under the constabulary since August last year, and has done very satisfactory work in running down carabao thieves and in maintaining peace.

"Politically the province appears as quiet and the mass of the people as contented as can be desired, yet a general awakening of all classes of people in civic life makes it unmistakably felt. Japanese successes have caused an almost surprising amount of interest even among the ignorant taos living in the most retired ranches, who otherwise are uniformly impervious to the progress of the outside world. In the larger towns along the highways of commerce this interest in Japanese affairs has been considerably stimulated by numerous cheap colored prints portraying the little brown man slaying the big white man. Taking for granted that all Filipinos aspire to become in the near future a free people, it is my observation among the more intelligent class in this province that they are well aware of their inability to govern themselves as well as they can be with American guidance and supervision. There is, however, a numerous band of professional politicians who continually strive to do their utmost to increase the discontent of the people. This class of men is largely represented among the educated Cagayanes of the province, some of them holding office, and a few outside Tagalogs and Ilocanos who are residents, properly speaking, of the province, but spend most of their time here. While there is no doubt in my mind as to the nature of the influence of such men, and the object thereof, they studiously evade being caught in anything that might complicate them.

"Speaking of the loyalty and cooperation of the population throughout the province to the American Government, we have to make a distinction here between two classes, the native Ibang and Itaves, who by temperament and tradition are an apathetic, unprogressive people, and the emigrated Ilocano, who furnishes bones and muscles of industry, and who from year to year are growing in control of the political as well as the industrial life of the province. From them, if from anybody, all active and intelligent cooperation with the Government as well as opposition to the Government may be expected. Unfortunately the great mass of them are still in such a state of ignorance that they lend themselves most readily to being duped by every chimerical intriguer, and during the last few months have shown themselves willing to dump thousands of their hard-earned pennies into the coffers of the committee for Philippine interest and of the societies formed with ostensive publicly known motives, but which are strongly to be suspected of deceit or self-deceit, if not disloyalty.

"PUBLIC IMPROVEMENTS.

"No public buildings of importance have been erected in this province, with the exception of a few different public school buildings and municipal buildings in the different towns and barrios of this province. The estimated cost of the school buildings is from ₱200 to ₱300 each. Much volunteer labor was used in their construction. A public school building is to be constructed in Tuguegarao at a cost of about ₱9,000. A vino still, capacity 1 liter in fifty seconds, was built in April at a cost of ₱10,000.

"A great many improvements have been made on the roads throughout the province. Three bridges have been built between Tuguegarao and Iguig at a cost of ₱17,000. These were built under contract, and are of stone foundations with wooden trusses. The esteros which they span are very bad during the rainy season. The road between these places is also being improved, so as to permit the use of vehicles. Twenty-seven bridges have been built between Aparri and Abulug, and the road there is being greatly improved. Much volunteer labor was used for this work. These bridges cost from ₱100 to ₱200 each.

"One steel-truss bridge is being built by the Atlantic, Gulf and Pacific Company, under contract to the province for ₱10,000, at Aparri, to be completed January 1, 1906. Mr. William E. Pearson, supervisor, expended ₱8,000 for road and bridge work in the Pangul district, west of Solana. Two of the largest bridges there are not completed as yet.

"In the Itaves district the presidentes have promised to build and complete sometime in October about 18 small bridges at an average cost of ₱250. The

province intends to repair the three bridges between Tuguegarao and the Isabela line; estimated cost about ₱500. Three or four thousand pesos are to be expended to build bridges between Alcalá and Gataran, to be completed this year. A road is being cut over the mountains between Amulong and Bagao, mostly volunteer labor. With the improvements already made, the bridges and road work now being done, and the new bridges and road work completed by the province for this year, transportation will be greatly improved.

"During the year 1904 attempts were made to clear the Cagayán River of stumps to a sufficient depth below low-water mark to eliminate the danger of water transportation during the dry season. The sinking of the *Sentinel* shows with what success. There are two places where these obstructions are really dangerous, one near Alcalá and the other near Amulong.

"The last payment has been made on the provincial school building, which was purchased from Mr. George Weber for ₱23,000."

ILOCOS NORTE.

Since Lieut. O. C. Humphrey, the acting senior inspector, cleaned up a small band of ladrones in one of the barrios of Dingras last March, there has been an absolute absence of laronism in Ilocos Norte. The constabulary was assisted in its prompt and decisive action by the good will of the presidente of Dingras. That official, hearing that a band of ladrones had begun operations in his jurisdiction, sent policemen to locate it and at the same time dispatched another for the constabulary.

Upon the constabulary's arrival he took his policemen and cooperated with Lieutenant Humphrey, and so effectively that the entire band of 7, with their 2 Remingtons, were captured and await trial.

Steps were taken by the district chief to place a detachment of constabulary at Dingras and to get it connected up by telephone. Delay in the delivery of the material for the phone line and in securing an American officer to command the station prevented a prompt consummation of these plans. Before the detachment could be placed the Apayao Alzados from Cagayán made a raid into Padong, a barrio of Dingras, and killed 5 people in their fields. High water cut the pursuing detachment off and the perpetrators of these raids have not been apprehended, although located. This was the second murderous raid made by the Apayaos and naturally the people in the district close to the mountains began to make bitter complaints. The constabulary has restored confidence by making expeditions from Dingras into the section terrorized. It is fully believed that the detachment can better protect the eastern section exposed to the Alzados of Cagayán by being stationed at Banna.

An allowance of ₱300 has been asked for, for the construction of quarters for the detachment either at Dingras or Banna.

While there have been no general disturbances in Ilocos Norte during the year, there have been several murders—one at San Nicolás, in May, of a woman and two children, unquestionably the result of bitter enmity; and the murder of a native at Batac by an unknown person. Three men suspected of perpetrating the murders in San Nicolás have been apprehended and are held for trial. The murder of Tomás Ladera, lieutenant of police in Badoc, in December was the result of enmity; the murderer is in jail awaiting trial. None of the aforesaid crimes have any political or religious signification.

The lack of an American officer in Ilocos Norte for field service during the past six months has been a serious drawback, and good order has suffered to some extent.

The return of Lieutenant McLean, now in Cavite, is earnestly hoped for, as his presence in the province is a strong guaranty of good order.

RELIGIOUS MATTERS.

While there has been a great deal doing in Ilocos Norte among the schismatics, there have fortunately been no open ruptures. The belligerent feeling a year ago has subsided, especially so in Laoag, where the local Aglipayano priest has made his submission to the mother church.

The people are pretty generally dropping their religious contentions and are paying most attention to their agricultural interests.

CONSTABULARY.

During the past year the constabulary of Ilocos Norte has been in a very transitory state. The senior inspector having discharged about 40 men, on account of their undesirable character, early in the year depleted the force, and when detachments were sent to Samar and Batangas the corps was reduced to a point where it was little more than strong enough to guard quarters, jail, and commissary.

This situation was further embarrassed by the discharge of a large number of men by expiration of term of service, thereby necessitating the enlistment of new men. This condition further indicates what might have been expected had detachments of these men been sent out to take station under a noncommissioned officer.

The unfortunate McGeachin affair of last February, and which has been entirely disposed of by mutual agreement between the governor of Ilocos Norte and the district chief (acting under instructions), has placed the constabulary of Ilocos Norte in a position of extreme delicacy and one that requires the most careful administration on the part of the senior inspector in order that absolute harmony may be maintained between provincial and insular interests.

Every effort has been made by Lieutenant Humphrey, supply officer and acting senior inspector, to avoid creating any irritation between the constabulary and provincial officials, and the present agreeable relations between the parties referred to is the result of his diplomatic skill.

The district chief has been most cordially received by the governor of Ilocos Norte, confidences have been exchanged, and it is believed that there need be no disagreements in the future.

The constabulary has a mess saving of ₱539.87, while it has cots, fencing foils, baseballs, bats, mits, and boxing gloves; also band instruments for a very creditable musical organization.

The school work has of necessity been neglected. The constabulary of Ilocos Norte has a finely disciplined nucleus, which it is expected will entirely leaven the new organization.

RINDERPEST.

The rinderpest entered the province in August, and within a month had spread to almost all parts of the province, and within two months the loss in bulls and carabaos had footed up to almost 400. The losses since then have been so great as to seriously menace the rice-growing interests of the province. The last crop was an abundant one, and the rice is plentiful enough for local consumption.

POLITICAL SITUATION.

There is much animation politically in the province, but it is of a healthful character. There are several who aspire to the gubernatorial chair, but from present indications there will be no change in its incumbency. The question of religion may figure in the Laoag municipal election, but hardly elsewhere. It should be observed here, however, that neither here nor elsewhere has it appeared that the Roman Catholic Church has taken the initiative or has been responsible for raising the question of religion in politics.

While there is much public interest in politics, it is directed to provincial and municipal affairs, and there is a very noticeable tendency toward better government in all that that term implies. It must be admitted that there is so strong a public sentiment in that province for good roads that it leads all others in the fourth district in this respect. The people in the province do not hesitate to repair a highway in the vicinity of their homes without command or suggestion of anyone.

Ilocos Norte has a strong political fiber. It is going to show tensile strength, and it is believed it will be for the government as it is organized in the islands. The governor and all leading men in the province are most determined in their opposition to Katipunanism and agitators of the revolutionary class. The opposition to amalgamations is so strong in the Ilocos provinces that the district chief was respectfully requested to favor the people by confining the constabulary, aside from American officers, to Ilocanos purely, and that request is being respected so far as it lies within the power of the district commander.

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ILOCOS SUR-ABRA.

Conditions in Ilocos Sur-Abra Province, aside from an occasional raid by Alzados from Lepanto-Bontoc, are decidedly peaceful. Constabulary work in the future in this province lies in the interior as a civilizing body and as a protector to the enterprising farmer in Abra. No impossible conditions face it, and the ensuing fiscal year will record a plan that can not help but contribute not only to the material benefit of the province, but to the happiness and security of the people.

It may be said, without any intention to disparage, the period of real organization, discipline, and constabulary merit in Ilocos Sur dates back but little farther than Captain Lovejoy's service here as senior inspector. Had the present conditions obtained prior to February 7, 1904, there would have been nothing to have marked that date more than any other, and the annals of Ilocos Sur would not bear on its pages the horrid scar "mutiny." Chaotic, indeed, was the state of affairs when the present senior inspector assumed command, November 8, 1904. Lieut. George Holmes, who was in command of the detachment, had done the best any man could with a wreck. Lieutenant McRae's supply officer was in good shape, it is true, but his animals were in sorry condition because of circumstances over which he had no control.

Captain Lovejoy had difficulty in equipping the 35 men he sent to Samar and Cavite, and was compelled to borrow 15 carbines from Lepanto-Bontoc. Without going into detail, it may be said that no better equipped, clothed, fed, disciplined, or more intelligent constabulary provincial organization exists than that now in Ilocos Sur and Abra.

When Lieutenant Duryea came into Ilocos Sur with the Abra organization, the contrast must have been painful. To the credit of Captain Knoll and Lieutenant Duryea, there was a state of efficiency and discipline in Abra to which all alluded with commendatory remarks. The new organization is now well up in the new United States Army drill regulations, with Butt's Manual for physical development.

The manifest intelligence in every duty performed by the constabulary soldiers speaks well for hard study in school hours. The greatest degree of intelligence and education is accorded the Abra contingent. The people in Ilocos Sur do not hesitate, however, to say that their confidence in the constabulary of this province as a reliable, beneficial organization has been restored.

The senior inspector commends highly the conduct of the present junior officers, and public prejudices, at one time a veritable contempt, have been fully overcome in the minds of the people. So well managed has been the subsistence of the constabulary that the total savings in the two provinces during the fiscal year were ₱2,225.15. The expenditure for the same period for holiday dinners, etc., amounted to ₱1,248.20, leaving a balance of ₱976.94, all of which is deposited with the treasurer of the Philippine Islands except ₱228.52. A shower bath will be made for the comfort and health of the men.

Arrangements for having the constabulary at Santa Catalina, at a monthly saving of ₱65 in rent, will remove the organization from the corroding influences of opium and gambling joints. Quarters are also being secured for the fourth district band in the same locality, when it will join the Ilocos Sur mess, share its savings and the benefits and drill in order that it may be able to act as a reserve and do guard duty in emergencies, thereby leaving the Vigan contingent foot loose to respond quickly to any call.

CUARTELS.

The Guardia Civil Building, two-story brick, iron roof, hard-wood floors, etc., valued at several thousand pesos, in Candon, is to receive needed repairs, and will eventually house the company which is to be stationed there and cover the lower part of Abra, Ilocos Sur, and take a hand in Amburayan and La Unión when needed.

At Bangued, Abra, the one-story iron-roof cuartel, ample for a company, needs small repairs. The Villavieja cuartel, of hard wood and cogon roof, in need of repairs, should be repaired and held for emergencies as a connecting link between San José and Candon.

Captain Lovejoy, through the cooperation of the people who had been suffering from visits of Bontoc head hunters, has built a new cuartel at San José, and another one at Sapid, in the jurisdiction of the rancheria of Lingay. The

Tinguane people, with the assistance of the few Ilocanos at San José, and the Igorot barrio of Danao, contributed their labors with much enthusiasm. These buildings were erected at no expense to the insular government, and another will be built by the people farther north as soon as the weather will permit, for the control of the territory around Baay and Licuan.

These cuartels, with that at Villavieja, or at another point nearer Pilar, will enable the constabulary in Abra to place a cordon of patrols around the peaceful Tinguanes and, with the projected station at Balbalasan, will be able to afford a sure protection against pillaging Alzados. Of course it will be necessary to have these cuartels connected up by telephone, for the head-hunter is fast and furlous.

A cuartel at San Esteban is a necessity. This station is made necessary for receiving and guarding Lepanto-Bontoc supplies. The detachment was recently moved from a ₱25 building to a building costing half as much.

Captain Lovejoy desires to tear down the old cuartel at San Quintín, Abra, and use the materials in repairs on other cuartels. He has recovered a great many of the timbers of the cuartels at Abas, Bandi, and Quimpal. A storehouse at Pandan is a necessity. An appropriation of ₱2,000 would give this province the buildings at Pandan, San Esteban, and make repairs on old cuartels.

MUNICIPAL POLICE.

The 19 organized municipalities of Ilocos Sur and Abra have a personnel of 279 members, maintained at a cost of ₱2,957 per month, or ₱35,484 per year. In addition to the above is the expense of uniforming the members of the force. There is, in addition to the above, a number of local policemen in each Tinguane rancheria, some receiving small pay, and others serving gratis in turn. The municipal police of this province compare favorably with the best in the district.

GAMBLING AND ITS RESULTS.

Sneak thieving broke out to such an extent in Vigan in July and August of last year that it was necessary to call on the constabulary for a patrol of the streets at night. While there is considerable stealing and house robbing going on, it is not to be compared with the former state. Gambling is pretty general in all the municipalities, and goes on apace and almost openly in Vigan, without interference on the part of the authorities.

Concerning crimes, Captain Lovejoy reports:

"The greater portion of crimes are the many degrees of assault, few of which are premeditated, but rather done on the spur of the moment in anger. There has been a great deal of homicide during the year.

"From July to November, 1904, the Alzado did not put in his appearance in the province at all, but during the latter month he came over on several raids and did some damage in the San José district, taking three heads—a man, woman, and child. The constabulary and municipal police were out all over the province of Abra during the greater part of the month, under the acting senior inspector, Lieut. Harry A. Duryea, and the Alzados finally found the country too hot for them and ceased operations. About the middle of November a detachment of municipal police met a party of Alzados carrying a freshly taken head. Upon being ordered to halt and surrender they ran from the police, who were armed with shotguns. The police fired several volleys of buckshot into them with the result of killing and wounding 12. The head was that of the man mentioned above, that of the woman was found about 400 yards from the scene of crime, and that of the child has never been located. Since the lesson taught by the firing into this band there has been but two raids into Abra, the first, in April, was frustrated by the captain of police of Bangued by taking their battle-axes from them and ordering them out of the province; the second resulting in but a few wounds, although the first report of the matter received by Lieutenant Allen stated that two persons had been killed.

"The Igorot has been in the habit of visiting the Tinguane towns and levying tribute of cattle, hogs, goats, chickens, rice, etc., under penalty of killing the inhabitants and burning the towns. This has kept the people in such fear that they dare not cultivate their cementeras at any great distance from their homes on account of the warlike habits of these roaming bands of Alzados. During the latter part of 1904, Lieutenant Duryea, then acting

senior inspector of Abra, made an expedition in company of a detachment of 10 constabulary into the section of country to the southeast of Sal-lapadan. The result of this trip was the recovery of some stolen animals and a treaty of peace between the tribes and the towns, and no report of this particular outfit having broken their pledges of friendship and peace has been received.

"Crimes are not on the increase, but more of the crimes committed are coming to light, by reason of the poorer people having learned that their cause is a government obligation under the present administration. They do not fear subsequent persecution, as in the past, and now have the courage to lodge their complaints.

"The following table gives a summary of cases which have been sent to the first instance court:

Criminal cases pending July 1, 1904.....	61
Cases filed during the year.....	95
Total	156
Convictions	43
Acquittals	16
Cases dismissed by default of evidence or pardon of the offending party....	45
Cases pending July 1, 1905.....	52
Total	156

"A great many minor cases have been tried and disposed of by the justice of the peace courts and by the several presidentes."

THE PEOPLE.

Captain Lovejoy further says:

"Since the fusion of the towns there are but 19 municipalities or Christian towns in the province. Municipalities that have lost their identity as such are apparently on the decline, no repairs being made to their homes, and the people seem to have gone, from a commercial and industrial view, into a comatose state, from which nothing short of a miracle will arouse them. This is not only true of the towns of Bocos Sur, but it is more noticeable in the towns of Abra since the fusion of the provinces.

"In the towns that are still the seat of local government a different state of affairs exist. The province of Ilocos Sur is in a good way agriculturally, and a large sum of money is coming in annually from the crops. The Christians of Abra are as a rule slow, unambitious, and anything but enterprising and progressive.

"The Tinguane alone seems to have ambition. He wants to work, and deplors the fact that he must keep a small piece of ground for the lack of proper protection. Given the opportunities of the Christian, the Tinguane will make Abra, with its fertile valleys, fine timber, immense grazing facilities, and good water transportation, one of the garden spots of the land. The Tinguane rancherías are clean, well-ordered towns with good houses. They themselves are industrious, hard, and diligent workers, and are always on the lookout for opportunities to improve themselves. They send their children in to the larger towns to be educated, and later one meets these young men and women in their native towns teaching schools in buildings erected by the people of their own volition. The government furnishes the Tinguanes with one American teacher to visit and superintend the Tinguane schools of all Abra, which seems to be a very small allowance when the ambitions and material to be worked upon are taken into consideration. The boys who attended school in Bangued went so far as to wear hats, shoes, and other clothing, and, what was more striking, cut their long hair. When these boys return to their towns to teach, many of the men and boys begin to trim their hair, a little at a time, until it is finally trimmed down to the length of our own. The Tinguane likes the American people, wants the American administration, by an American, desires the American customs and language, and copies the American as much as his rare contact will permit.

"Since the union of Abra with Ilocos Sur, Abra seems to have gone to waste and to have lost what little vitality it once had. Given his heart's desire, an American governor, one who will be just and has the proper personality to win

his affection, the Tinguane will redeem Abra. The Tinguane is a born farmer, and if taught modern methods will develop beyond many more civilized tribes. He understands many problems of irrigation, and anyone may see in Abra evidence of his ingenuity, which surprises the uninitiated.

"In Ilocos Sur proper the Ilocano is as industrious as any people in these islands, as their products will testify. The export of maguey and sugar for the year just closing was very large. They are now planting the rice crop with great energy, and many people are talking of returning to the indigo industry, which same was entirely destroyed by the insurrection. The boom in maguey business is of the most importance. Everywhere one sees new maguey fields, and inside of five years the output of this staple will be enormous."

RELIGION.

Religious questions which formerly caused some trouble among the people have all been handled judiciously, and no further trouble is anticipated in Ilocos Sur. Bangued, Abra, is the latest town to get itself all wrought up, but not to such an extent as to create public disorder.

Last October the district chief, anticipating trouble over church property in the northern part of the province of Ilocos Sur, took the precaution to send out detachments of constabulary to keep the peace. If there was any necessity for this precaution it did not manifest itself, or the precaution may have had the mollifying effect. Since then there has been no occasion for apprehension of trouble between the adherents of the various religious bodies in this province.

ISABELA.

The execution of Manuel Tomines and the surrender of Maurice Sibley, a deserter from the Sixteenth U. S. Infantry, with the balance of the arms which had been held out by Col. Raymundo Jaciel, closed the last chapter in the "Isabela Insurrection."

Governor Curry gave the people of the province a great deal of encouragement during his régime, and there is no longer that fear of insecurity which prevailed a year ago. The governor's influence among the Calingás and Igorot was strong and won the support of many who had formerly been enemies to law and order. His tact and judgment has left a lasting impression on the province for good.

An attempt to organize a ladrone band in a barrio of Echagüe last September got its coup de grâce while it was a "bornin," for the local authorities gave the constabulary their entire assistance, and all the members were jailed.

Captain Owen, the senior inspector, has had the excellent and faithful services of Lieutenants Treadway and Upham, and cattle stealing and small troubles have been given very prompt attention, and the general conditions for order in Isabela province are good. Captain Owen's policy of frequent expeditions among the Calingás, Ilongotes, and Igorots has had the effect of quelling many old tribal feuds. The senior inspector's policy has been especially beneficial with the Calingás, and a number of arms have been surrendered by them. The constabulary of Echagüe has rendered the constabulary of Nueva Vizcaya valuable assistance in capturing escaped prisoners and malefactors.

The schools installed in the pueblos and nearly all the barrios, with 4 American and 60 Filipino teachers, have an attendance of 4,300, and the high school of Ilagan has an attendance of 190 and is making great progress.

Aside from smallpox, which was vigorously and very successfully handled and stamped out by the provincial and municipal physicians, this province has been free from contagion.

AGRICULTURE.

Drought in April did great damage to crops of all kinds, but to tobacco alone the damage is estimated at ₱50,000, while the overflow of the Cagayán in May destroyed tobacco between Ilagan and Echagüe to the extent of about ₱60,000.

The three visitations of the grasshoppers did but little damage. The enormous tracts of unoccupied lands make it next to impossible to destroy the grasshopper pest in Isabela.

The crop cultivation in Isabela is mostly tobacco, while corn is also grown extensively. Rice is only grown in the vicinity of Córdón and Carig and only for local consumption. Two-thirds of the people in Isabela have corn for their daily diet, instead of rice. Nearly all the Christians live in the vicinity of the

Cagayán and its tributaries. The wild tribes who occupy but limited tracts grow abundantly for their own needs rice, corn, camotes, sugar cane, beans, etc. There has been no market, neither has there been anything in the line of barter to stimulate the primitive tribes to grow beyond their own wants. But one-fourth or less of the province is under cultivation, and the western part of it contains the finest prospects for homesteads and cattle ranches in Luzón. Water in noble streams, mountain ranges full of wood and stone, and valleys and savannahs of great expanse lie unoccupied, inviting tenants.

The Ilocanos of Ilocos Norte, who have become the warp and woof of Cagayán are now extending their agricultural conquests into Isabela in the vicinity of Ilagan. The tobacco companies have extensive rancherías, but many thousands of acres just as productive and well adapted to tobacco and sugar cane wait for men and animals.

The people of Ilocos Sur have been invited to organize a colony for the Mangali, or Danao, River valley and have been promised constabulary protection in case they will colonize that section.

NONCHRISTIAN TRIBES.

Captain Owen in his annual report says:

"This province contains about 12,000 non-Christian people, which are composed of Ilongotes, Calingas, Negritos, and Igorrotes.

"The Calingas occupy the foothills and lowlands between the mountains on the west and the Cagayán Valley on the east, and a few live east of the Cagayán Valley in the foothills near the range of mountains which traverses the east coast of the province. The Calingas are a very industrious people and raise tobacco, corn, sugar cane, and cultivate and open up the unsettled sections.

"The Negritos reside in the southern part of the province in the mountains between Palanan and Dumabato. They have no fixed habitation or pursuits, but roam over this entire district and pass their time in fishing and hunting for a living. The Negritos cultivate no land and build no houses, and are therefore of little assistance to themselves or the general condition of the country at large.

"The Ilongotes and Igorrotes are more industrious, and occupy the mountain districts both south and west of the Cagayán Valley. They have fixed residences and cultivate the lands and raise rice, sugar cane, corn, and various garden products in quantities sufficiently large to supply their own needs, and are to a degree independent of the outside world for their living.

"All the wild tribes, with the exception of the Calingas, who reside in the Guinabbual district, and the Ilongotes of Payupay, are friendly with the government and render the authorities every assistance called for. During the past year there has been some little killing done between the Igorrotes of Bunsian and those who reside in Culunan or Balangao, but since the conference of Major Crawford, Philippines Constabulary, in June, 1905, they have behaved very well, and no further reports of killing have been received.

"During the past year two expeditions were sent to the Guinabbual district and both met with the same result, viz. an unfriendly greeting, and declined to extend hospitality to the members of the expedition.

"The Ilongotes of the ranch of Payupay, located 45 miles southwest of Echagüe and thought to be in the province of Vizcaya, have entered several of the towns and ranches of Nueva Vizcaya during the past six months and killed several Filipinos.

"Lieutenant Upham made an expedition to this ranch recently and captured two of the most important Ilongotes of said ranch, but en route to Echagüe one man named Gagu escaped, but was captured later by the constabulary of Vizcaya. The constabulary of Vizcaya captured 14 of this band, and had charged them all with murder. At 1 a. m., on June 28, 13 of this band escaped from the provincial jail, in Bayombong. The constabulary at once took the field and managed to locate the leader, Gagu, drowned in the Magat River, but the balance of the gang are still at large. Lieutenant Upham has again been sent out to Payupay to assist the constabulary of Vizcaya in locating the escaped prisoners."

POLITICS AND RELIGION.

There has been no political agitation and the people are averse to the agitators since the Tomines troubles. The only event of importance in municipal circles was the expulsion, a month ago, of Consejal Guzman in Cabagan Nuevo. He had made unfounded charges of illegal collection of money against the municipal officials.

The Independent Catholic Church has parishes in Santo Tomás and Furao, a barrio of Gania. The only excitement created by the Aglipaynos was when an overly zealous number of the Furao members robbed the Roman Catholic Church in Naguillan of some images. Prosecutions followed and no further forays of the kind are expected. The Aglipaynos propagandists have not been successful in this province.

POLICE.

Captain Owen, referring to the police and other matters, says:

"This province contains 11 pueblos and has 90 municipal policemen, as follows: 1 lieutenant, 11 sergeants, 6 corporals, and 72 privates. The monthly cost of same is ₱1,439.00. The police force in general does very fair work, but lack discipline and decision in most all the pueblos.

"Governor Villamor is now making up a new set of regulations for the government of the municipal police, which, it is believed, will have a tendency to show the presidentes the duties and obligations of the municipal police and confine the police to their duties better, and as a standard it is hoped the police may be elevated to a better standard and better results obtained.

"INTERNAL-REVENUE TAX.

"The introduction of the new system has met with no opposition on the part of the inhabitants, and has produced practically the same revenue or more than the old industrial tax, and there seems to be quite a general satisfaction with the provision of the new law. There has been no reclama against this administration.

"The only confusion that has arisen in the enactment of the provisions of this law is, in the municipalities of Cabagan Nuevo and Angadanan councils enacted ordinances fixing an additional tax on cockpits. This tax has been collected by each of the municipal treasurers in capacity as deputies as a municipal tax, whereas according to the amendment referred to it is internal-revenue tax.

"CONSTABULARY.

"The constabulary for the past year have had an average strength of about 114 men. However, the actual strength has been much less than the above figure for the past six months on account of the fact that 38 men have been on detached service during the above-mentioned period. The men have attended night school during the greater part of the year, and from the reports of the instructors they have all worked hard and have made good progress in English during the period of attendance at same.

"The constabulary of this province has made wonderful improvement in discipline and work in the past year, as many of the poor men have been weeded out and new men have been substituted in their places. It is true that the men in this province are not as good as those in provinces near Manila, for the reason that it is impossible to procure men here that possess the same intelligence in general as those of other provinces that have had better opportunities in school during their childhood, but they are improving gradually, and believe that in the course of two or three years they will be on a footing with those of other provinces. The constabulary of Isabela furnished a guard for the provincial jail for eleven months during this year. On account of numerous expeditions with wild carabao ladrones the guard on the provincial jail was removed in the latter part of May, and since then the municipal police have performed this duty.

"During the past year the constabulary has saved ₱783.80 on rations, and from January, 1904, to June, 1904, the sum of ₱788.95, making a total of ₱1,572.75. During the past year ₱618.80 has been expended for cots, tables, and benches. ₱607.29 of the balance has been deposited with the treasurer for the Philippine Islands, and the balance, ₱266.66, is in the possession of the senior inspector, at Ilagan, and will be deposited as soon as practicable.

"The arms and ammunition recovered during the year were as follows: Krag rifles, U. S. Army, 1; Mauser rifles, 4; shotguns, 8; Springfield carbine, U. S. Army, 1; total, 14; 2 carbine belts, U. S. Army, and 198 rounds of Krag ammunition."

LA UNIÓN.

The conditions in La Unión, as far as compliance with the general laws are concerned, are all right and the people are quiet and prosperous. There are no organized bands of ladrones and there is nothing beyond the ordinary isolated theft of an animal here and there.

Something of a furor was created in that province last March by the activity of some members of the Guardia de Honor. The alarmists worked overhours for a few days seeing significant signal fires in the mountains and countless hosts marching into the civic citadel. Colonel Scott, chief of the first district, made a prompt investigation and sifted the whole revolution down to a case of graft by a few individuals. It is alleged that these individuals made collections of various sums to be devoted to masses for early independence. Those running the graft now await trial by the court of first instance.

It is said that there are a lot of chimerical people in La Unión, and it is also quite certain that there is a small mischievous element in that provincial precinct, which it is the intention of the constabulary authorities to work out. Their disturbances are not revolutionary, but are in the nature of abuses and meddling. Some of the local politicians have been interfering with the tribes in Amburayan, to the disgust of the subgovernor, while others, notably at Bangar, have been grafting the Igorot in Amburayan unmercifully. The acting senior inspector has some of the abuses ready to air before the court of first instance.

During the past year the agricultural conditions were satisfactory to the superlative degree and the tobacco output was the best in quality for years. The Unión Obrera agents tried to amalgamate the laborers throughout Unión but the people were knowing enough, after the Gómez fiasco in Manila, to keep out of that dragnet. The agents went back bootless and discouraged.

The Aglipayanos have not been so successful in La Unión as they were farther north, although the Independent Church has made considerable of an inroad into the old Guardia de Honor ranks and may make more of a showing later on. Jealousy prompted a murder last November, but the perpetrator, confessing his crimes, was committed to jail for trial.

The educational department has been successful to an extraordinary degree, and the attendance of the pupils and enthusiasm in study is substantial, being strongly supported by both municipal officials and parents.

This province has been unfortunate in the matter of frequent changes of officers, and the former excellent working order of the municipal police may have fallen off and out of the control of the constabulary in consequence of these changes. It is believed that Captain Cofren will be able to harmonize all interests in that province. Failure of La Unión to get in an annual report in time makes it impossible to give any figures or statistics in connection with the constabulary of that province.

It is fully believed that closer relations between the senior inspector and the provincial and municipal officials in the future will atone for what the past year has lacked in this respect.

LEPANTO-BONTOC.

Considered from an industrial point of view, Lepanto-Bontoc must be regarded in the light of being ahead of the Christian provinces. Primitive in nature, the proud denizens of the terraced domains, nestled with the embraces of the Cordilleras of northern Luzón, have risen by force of necessity into a position of absolute independence of the outside world. The crops of rice and camotes recently garnered in the numerous rancherías of Lepanto-Bontoc are the best they have had for years.

His happiness and comfort do not hang upon the uncertainties of agriculture, however, for his prudence and frugality has long since caused him to take advantage of the prodigality of nature and invest in agricultural banks of his own—the numerous wooden sided, cogon roofed, camarines, scattered so plentifully around in the ranchería, stored to repletion and sealed against drought or ravages of insects.

His sementeras of centuries spread out through additions of succeeding generations, and their ramifications seek every mountain pocket and cranny where new possessions await the coming season.

With the exception of smallpox in Dakalan, on the eastern boundary of the province, there has been no serious contagion.

The Government has worked extensively on trails, extending that from Bontoc through the rich and prosperous Chico River range to Tinglayan, greatly facilitating transportation, and has begun the opening up of the pony trail from Cervantes south to Tagudin, greatly reducing the distance to the coast. The Igorot has likewise improved the side trails, making pedestrianism as easy as possible, considering the mountainous nature of the country.

Wherever schools are open to the Igorot he patronizes them, and the children show extraordinary aptness. The constabulary has contributed very greatly to civilization in Lepanto-Bontoc, and the Igorot looks upon it with much favor, as it is in contrast with former insular forces—neither harasses nor oppresses him. The expeditions of the past fiscal year have greatly lessened the head hunting, and security to life is guaranteed on the general trails. The government has been fortunate in its choice of constabulary officers for the Igorot country. Captain Nathorst performed services of inestimable value by his strong policy of settling tribal feuds, brooking resentment, for the time, of bellicose rancherías, only to win over their confidence and cooperation. His worthy successor, Captain Eckman, inspired by the same motives which impelled his predecessor, returns to renew old-time friendships and to carry forward the work of peacemaking.

The establishment of the station at Lubuagan and that projected at Balbalasan will put an end to Lubuagan ravages on weaker rancherías, and the neighbors lying between Lubuagan and Bontoc, notably Bangad, also breathe easier and, no longer fearing the prowess of Lubuagan, are reclaiming their distant sementeras. It also insures peace at Talocot, Llas, and Barlig—protéges of Captain Nathorst and subjects of his peacemaking. They have joined in the general compact, and the east is safe from warlike demonstrations. Balbalasan has given the Tinguanes and Christians of Abra a guaranty of peace and immunity from tribal raids from Lubuagan and its allies. A peace conference, held by the district chief in Calunin (really within Isabela), brought together in amity Barlig, Llas, Talubin, Cadacalan, Tinglayan, Culunan, Balangao as one grand compact. A truce was also declared with the aforementioned rancherías on one side and the treacherous Bunsian, Mayayao, and affiliated rancherías on the other, and it is hoped that head hunting as tribal enterprises has been suspended in the grand interior lying between Palis Mountain Range and that forming the west line of the Cagayán Basin. It is a matter of regret to the district chief that the northern part of Nueva Vizcaya is not in the fourth district, as Guines, a ranchería of Nueva Vizcaya, has been most persistent in its forays in the Cadacalan, Culunan, and Balangao country, and no longer ago than January or February Guines could be easily reached by Bontoc constabulary.

Several murders were committed during the past fiscal year and some of them have been disposed of by Judge Burrit. The murderer of a young woman near Talocot has not been captured as yet. This murder was the sequel to a separation between husband and wife. There is considerable stealing going on among the Igorot, but the most of it is punished by the ranchería tribunal. The purloiner of a pig usually pays a penalty double the value of that taken. This system of local justice, while not governed according to the code, has the remedial effect of restoring the property, of punishing the offender, and saves the government expense.

The theft of a media peso in Lubuagan, which was followed by fine of a carabao, was appealed to the Bontoc authorities and several of the parties are charged with extortion. Had there been a level-headed American constabulary officer the entire matter could have been adjusted, inasmuch as all the parties are neighbors, and while the penalty was high, it all tended to make stealing an unprofitable and unattractive business.

CONSTABULARY.

The enlisted strength of the Lepanto-Bontoc constabulary is made up principally of Igorot, and there are no more reliable, husky, alert, or valiant constabulary soldiers than these. The system of bringing in representatives of the principal rancherías has an admirable effect and makes toward a general peace, as the friendships formed in the constabulary promote relations between all the tribes represented. The people in the rancherías are very proud of their representatives in the insular army. Their endurance, amenability to discipline, make them very desirable for the mountain service.

Lieutenant Harris, supply officer, and who is a practical carpenter, has developed a number of very fair carpenters among the enlisted men, and the new wooden cuartel to accommodate the 50 men at Lubuagan, 5-room, pine-boarded officers' quarters at the same place, the large structure intended for supply officer and senior inspector's offices, commissary, etc., at Cervantes, as well as the men's quarters in process of construction at the latter place, attest to the capabilities of these men as artisans.

Their mess savings give them additional food and comforts which make them realize that the constabulary is an attractive service to them. The Igorot soldiers make fine progress in school, and many of them speak considerable American.

The district chief can testify to the alertness of the Igorot sentinel and his value as a camp guardian, especially when there is the suspicion of danger or possibility of treachery. Special reports have already been made in behalf of the restoration of unexpended balances for completing the buildings already under way in Lepanto-Bontoc. The money could all have been expended within the fiscal year by giving contracts, but Lieutenant Harris has a practical way of doing the work himself and getting double the results out of a given sum.

The relations between the constabulary officials and the provincial officials are the best. American officers will command escorts when provincial officials go out on business, and there will be no danger of accidents and much valuable assistance can be rendered the provincial officials, for the Igorot has much respect for the shoulder strap or any official livery.

In the absence of an annual report from Lepanto-Bontoc no statistics can be given.

CIVIL COMMISSARY.

Circular Letter No. 5, current series, issued from the office of the chief supply officer, refers to a possible consolidation of some of the provincial commissaries when feasible. This led the district chief to make inquiry among the supply officers of the district as to the necessities which exist in their respective provinces for a civil commissary, and to what extent eliminating the commissary would affect the comfort of the constabulary and its service.

The consensus of opinion expressed by the supply officers is summed up as follows:

Ilocos Norte.—The abolition of the commissary would in no way interfere with the efficiency of or the comfort of the constabulary. Officers could supply themselves at the Vigan commissary or directly from Manila.

Ilocos Sur-Abra.—Supply officer is of opinion that great saving could be made by consolidating the Vigan commissary with that at San Fernando, where ships land and the year around and stores are handled at little or no expense to the government. It was added that a local dealer is selling many food supplies at equal or lower rates than the constabulary prices. Captain Lovejoy strongly recommends the closing of the commissary, holding that its maintenance imposes much labor, expense, and risk of loss, without an adequate return in advantages to either the government or the constabulary service; and for the further reason that a disposition on the part of the local dealers to supply the Americans with staples at moderate prices should be encouraged.

La Unión.—Commissary supplies are handled with very little expense to the government. The abolition of the commissary would only affect the officers of the constabulary and the few American officials. The native officials buy but little in the commissary. If constabulary officers and American employees could be given permission to buy at an advanced rate, say of 10 per cent, from the military commissary at Camp Wallace, the commissary at San Fernando could be closed without detriment to the constabulary.

Cagayán.—Closing of the commissary would work great hardship upon both officers and enlisted men. In the market the price of rice is ₱8, while it is ₱5.63 in the commissary. The merchants sell at from 25 to 50 per cent above commissary prices. Any further increase in the price of living in the Cagayán Valley would necessitate the junior officers asking for transfers, in order that they might live within their salaries.

Isabela.—The exorbitant prices charged for the necessities of life by Isabela merchants make a civil commissary an absolute necessity there. Both the officers and enlisted men would suffer if the commissary were closed. To close the Isabela commissary and supply from Cagayán would be expensive for buyers, as water rates are very high from Tuguegarao.

Benguet.—The abolition of the commissary would be a great hardship upon the constabulary. If the men's mess were to be supplied from the open market, where rice sells for from 8 to 12 cents per pound, the ration allowance would have to be doubled. Again it is not believed that the commissary could be dispensed with at Benguet, because of the necessities of the commission and sanitarium. The supply officer's sales since March 1 to June 30, 1905, were ₱50,963.62, of which the ₱30,733.45 were for supplies sold to the sanitarium.

The balance were sales to the civil employees, the commissioners, and ₱1,400 to the constabulary.

Lepanto-Bontoc.—Because of the isolation of this province the necessities of the Americans for a commissary are great. The constabulary is so preeminently a governing and controlling power in that province that it would appear that it should maintain the commissary in Cervantes for the benefit of the civil employees. The commissary also supplies the constabulary mess with many articles that could not be bought in the market except at very high prices. The above is the opinion of the district chief and is concurred in by the supply officer. There are few merchants in the Lepanto-Bontoc country and the commissary is needed as a matter of protection to the public against exorbitant prices.

Conclusion.—It is evident that the Cagayán Valley and Lepanto-Bontoc can not get along without the civil commissary without great inconvenience to both constabulary officers and enlisted men. Extension of the privileges of the military commission to employees in La Unión would obviate the necessity for a civil commissary and make a saving at that point.

A local dealer who has been selling supplies at prices equal to or even a little lower than the civil commissary assured the district chief that if the civil commissary were abandoned in Vigan he would lay in all supplies now carried by the commissary and as far as possible would not exceed commissary prices.

If this arrangement could be effected in behalf of Ilocos Norte, Ilocos Sur, and Abra, it would eliminate a large item of transportation and make a saving of all the losses incident to the risks in shipping and deterioration of goods on the shelves. If one merchant will consent to come down to commissary prices others would follow. Dispensing with the commissary in Ilocos Norte and Ilocos Sur ought also to make it possible to reduce rents.

It should be noted that while the employees of the civil government would be protected by the aforesaid concession from exorbitant charges for the staples of life, the same benefit would naturally extend to all Americans not in the service of the government, and later would benefit the natives whose habits of life have been changed by American tastes and demand such staples as sugar, salmon, fruits, and many other articles now sold by local dealers at prices beyond the reach of the Filipino.

PUBLIC HEALTH.

At the present time smallpox exists in the coast towns of Unión and Ilocos Sur. The infection came from the south and has gradually spread northward. The greatest mortality reported in any month was 30 deaths in the month of May in Tagudin. The disease has prevailed to some extent in Santa Cruz, Santa Lucía, Tagudin, Candón, San Esteban, Santa María, Narvican, and at present there are a few sporadic cases in Santo Domingo.

Doctor Elliot and a force of vaccinators from Manila have been operating in Ilocos Norte with excellent results. Doctor Crisologo, the provincial surgeon, has been busy in the southern end of Ilocos Sur. In Candón alone he vaccinated 5,000 persons, and made it a rule to vaccinate all Igorot cargadores from the Lepanto-Bontoc country. This practice minimizes the danger of having the disease carried into the interior, although it has been reported to the district chief that the rancheria of Dacalan, on the eastern border of Lepanto-Bontoc, had been infected and had many cases.

An attempt was made during a recent expedition to investigate conditions at Dacalan, but the Igorot cargadores at Madacayan, Isabela, positively refused to accompany the expedition to Dacalan, because of their fear of smallpox.

The Igorot himself contributes a voluntary quarantine and will not permit strangers to enter the rancheria when smallpox or other infectious diseases are prevalent. His neighbors, as a rule, stay away from the infected rancheria.

TELEGRAPH.

The telegraph and telephone service in the fourth district is conducted with skill and success by the superintendent of the department. The native public show much appreciation of the service, and their requests for extension of lines are much beyond the present resources of the department. During the past year many of the pueblos of Ilocos Sur offered to buy telephones and maintain them if the privilege was given to connect up, but authority to make the expenditure was denied by the insular authorities.

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It is a matter of regret that the force of linemen and electricians is not large enough to meet the extra work attendant upon an extension of the telephone system into every pueblo. That alone would arouse a local interest in the telephone and telegraph and greatly assist in the maintenance of the lines, not to mention the appearance of progress. It would have a great civilizing influence if important rancherias in the Igorot and Tinguane country could be connected by telephone with central points.

The rejuvenation of the lines between Laoag and Dingras has brought the constabulary into very close touch with a section which in the past has been greatly disturbed by Cagayán head-hunting Alzados.

San Miguel, San Nicolás, and Batac have been connected up with Laoag by telephone, much to the pleasure and profit of the governor and provincial authorities, as well as to the advantage of the constabulary service.

The maintenance of the office in Lingey, on the side of the mountain above Concepción, has a wider significance than just to be a mere station. The building occupied was formerly the property of the Guardia Civil and is a very substantial wooden structure. Lieutenant Harris, supply officer at Cervantes, has had the building repainted and repaired. The province had a mind to appropriate this building for municipal purposes, and it was necessary for the constabulary to occupy it if it retain the property without danger of friction in regaining possession in the future.

The building has four rooms of good size, with a wide hallway. It furnishes quarters for the operator and lineman; a large room for the use of the constabulary officers, provincial officials, and others who may find it necessary to spend the night in that locality; ample quarters and accommodations for constabulary detachments en route. In the event that a pack train is furnished Lepanto-Bontoc, Lingey can be used for a relay station and the Guardia Civil building will be indispensable in that connection.

The district chief has encouraged the plan of having a married man for lineman or operator and that meals be furnished travelers at a price that will come within a reasonable expenditure. A very worthy native couple at Concepción has been furnishing meals, but at the peso-per-meal rate.

ABRA LINE.

It is earnestly recommended that the telephone line, now already extended into Abra as far as San José, be carried forward to Balbalasan and thence to Lubuagan. The distance from San José to Balbalasan is 21 miles; the distance between Balbalasan and Lubuagan is about 20 miles. Captain Keech, of the Vigan telegraph district, is very certain that the telephone line can be extended to Lubuagan via Balbalasan at no expense beyond the wire, brackets, etc.

The extension of the line from Bontoc to Lubuagan is not practicable at this time because it is not possible to patrol the line between Tinglayan and Lubuagan during the rainy season. The great necessity for telephone communication with Lubuagan is apparent and is equally as necessary at Balbalasan.

The extension of the telephone service to Balbalasan will save travel and much expense to Lepanto-Bontoc and will enable the constabulary at Balbalasan to cooperate advantageously with Abra constabulary.

The work of the year in this department is shown in the reports of the district telegraph officers, and are as follows:

FOURTH DISTRICT OFFICE.

The district chief has been hard put to for the service of an adjutant who has been trained to the work of that department. The district supply officer has his own department and, having no clerk, has sufficient work to occupy his whole time. Therefore the adjutant's work does not of necessity have the attention it merits. The district chief feels the lack of the services of a trained adjutant and requests that his office be favored with an early appointment, in order that the district chief may spend most of his time in the field and among the provincial and municipal officials.

Respectfully submitted.

SAMUEL D. CRAWFORD,

Major and Assistant Chief, Commanding.

To the ADJUTANT GENERAL PHILIPPINES CONSTABULARY.

EXHIBIT 5.

REPORT OF OFFICER COMMANDING FIFTH DISTRICT, PHILIPPINES CONSTABULARY.

HEADQUARTERS FIFTH DISTRICT PHILIPPINES CONSTABULARY,
Zamboanga, P. I., July 5, 1905.

SIR: The undersigned has the honor to submit the following report of constabulary operations, progress, and conditions in the fifth constabulary district for the year ending June 30, 1905.

Since June 30, 1904, constabulary have been organized in Lanao and Cotabato districts. The policy of the governor of the Moro Province, also the commanding general of the Department of Mindanao, has been to limit the duties of troops to those customary in any community under civil government. Pursuant to this policy the troops have been withdrawn from small stations and concentrated. There are four military stations in the Lanao district, three in Cotabato, one each in Zamboanga and Sulu districts. In Davao district and Misamis and Surigao provinces there are no United States troops. In those jurisdictions the responsibility for order has rested entirely on the constabulary. In the Sulu district, south of Jolo, and in Zamboanga district, outside the capital, the same is true. Military commanders take part in civil affairs only on the call of the governor of the district in which they may be stationed. Only one district governor is also a commander of troops. The constabulary has become the dependence of the governors in matters relating to tribal wars, criminal process, escorts, slavery investigations, prevention of illegal tribute and slave stealing, smuggling of arms and opium, in all parts of the fifth district except in certain portions of Lanao and Cotabato districts and on the island of Jolo, which in area are a very small part of the district. No station in the Moro Province has been occupied except on agreement with the governor as to its necessity, and generally on his request, and there is none to-day occupied whose abandonment by constabulary would not necessitate reoccupation by a military organization, except in Lanao and Cotabato, where some stations are occupied by both forces.

CONDITIONS.

In the Moro Province the payment of cedula has met with some resistance in the Sulu district, and the operation of the slavery laws is not desired by Moros anywhere. Without any doubt, however, slavery has decreased. The open traffic has practically stopped. Many slaves have been set free, many more have been offered freedom if they desired it, but the institution itself will probably linger among the Moros for at least a generation. Cedula have been taken out by Moros to include May 31, as follows: Zamboanga district, 2,892; Sulu district, 5,857; Davao district, 838; Lanao district, 2,400; Cotabato district, 3,742; total, 15,729.

Dato Ali is still in hiding in the Cotabato district. Desultory operations have been conducted against him during the whole year. Aggression on his part has long ceased, but he remains at large, and, of course, defiant to the law and government. The recent severe defeat of the Moros and death of Pala on Jolo will be a great argument for payment of cedula in that region. That the Moro will become an educated and useful member of society or fit for self-government in a decade or even a couple of generations is not to be expected, but with judicious handling by the right man or men with no change of policy visible to them they may in a few years live at peace with each other and the government, refer the greater part of their differences to the courts, cultivate land, consent to indirect taxation, send their children to school, and cease to carry arms. Employment, with the opportunity to accumulate property, will be the great civilizer, for the more he has to lose the less liable is the Moro to go "juramentado," or otherwise forfeit his life, liberty, or property. The building of the railroad from Iligan to the lake will do more than almost anything else to encourage the lake Moros to engage in business and cultivation. Quiet prevails at this writing in all parts of the district. Affairs in Misamis are in a bad way governmentally, and trouble will never be far away until a change takes place there. The poor are oppressed by wealthier countrymen, and one of the best agricultural provinces in the islands is unproductive and undeveloped. The governor conducts a paper administration of his province

from its capital, and has neither the energy nor disposition to personally go out and see things for himself. The common people are densely ignorant, without knowledge of the law, of their rights, or of the good intentions of the insular government, if, indeed, they are aware that there is any government higher than the executive of the province. To them everything is in the one man above them. Of the scores sent to Bilibid from this province for the armed disorders of the first eight months covered by this report, probably not one in twenty knows of the existence of the United States, or is able to guess whether America is a town or country. The constabulary that captured them is to them but a better armed and better led band than their own; that it finds its head in Manila or is in any way an instrument of a government having its seat there is beyond their imagination. With all this ignorance it is believed that the personal visits to all towns of an energetic governor, strong in body and mind, with explanations of the laws, advice on rights and duties of citizenship, with confidence that the displeasure of such executive would be visited as quickly on the principal as on the tao, would change Misamis from the always doubtful column to one of the most law-abiding communities in the archipelago. It is a work to which a white man might be proud to devote good years of his life.

The Aglipay Church has made gains during the year in this province, particularly on the west side of Iligan Bay, where it threatens to be a church militant. It is believed to be waning in strength in Surigao Province, and at any rate does not there produce the surly ill temper on the part of its adherents that characterizes them around Oroquieta and Jiménez, in Misamis Province. In both these provinces there has been a tendency within the year to increased independence in religious thought, which has no connection with Aglipay agitation. This tendency, which does not involve disrespect to constituted authorities or to law, has probably led to some reports from constabulary, provincial, and Roman Catholic authorities in which it has been confused with disturbances originating in the Aglipay ranks.

The whole island of Mindanao has suffered from drought. The hemp has in some places wilted and died, and the cocoanut crop is smaller than usual. Even in Davao, where rainfall is quite uniform throughout the year, the weather has been so dry that the Agusan River, which rises in that region and is usually a mighty stream at all times of the year, has been lower than before for many years. A résumé of work performed and strength by races is appended, marked "A."

COMPANY A, FIFTH DISTRICT.

This organization was formed last October of 2 officers and 50 men, and constitutes the reserve of the district when force of any province proves inadequate for any purpose. It has been stationed at Zamboanga, but in the interest of economy is now kept in the fort at Isabela de Basilan. It participated in expeditions in December and January with United States troops and constabulary of Cotabato in the Río Grande region and had an active and creditable part in the recent military operations of Joló against Pala and his outlaws.

COTABATO.

This constabulary of 3 officers and 100 men garrisons 4 stations. It furnished an officer and 25 men for service on Samar three months last autumn and has had an officer and detachment in Batangas since February. It has participated in several expeditions with the United States troops operating against Dato Ali, besides the customary activity after carabao thieves, patrolling, etc. This constabulary furnished a detachment of 20 men for the expedition against Pala on Joló in April and May. The stations of Taviran, Libungan, and Tumbao are maintained on the Río Grande to examine vintas, assist in the embargo on contraband traffic between the lower river Moros and Dato Ali, and maintain order in the vicinity of the stations.

DÁVAO.

This constabulary consists of 4 officers and 120 men. It occupies the stations of Davao, Mati, and Baganga. There are no troops in Davao district. The principal outlawry in this region consists of abuses perpetrated by unscrupulous Visayan principales on the taos of their own race and the neighboring pagan tribes. The district has been quiet throughout the year. It has a

larger proportion of white settlers than any other part of the island, and will be consequently more sensitive to any disorder. A telephone line from Dávao down the west coast of the gulf to Malalag has been turned over to the constabulary. It is hoped that another year may see a telegraph line extended from Pikit, in the Cotabato country, over the mountains to Dávao.

LANAO.

This constabulary was organized during the year; is not yet up to its authorized strength. The part of Misamis west of Iligan Bay has recently been placed provisionally under the senior inspector of Lanao, it seeming to be poor administration to require the senior inspector of Misamis to travel by sea along 40 miles of coast belonging to another constabulary in order to inspect a little strip of territory much easier handled from the capital of Lanao. The authorized strength of Misamis constabulary is barely enough to keep the peace in the province, exclusive of this strip. Besides Misamis station, another is maintained by the Lanao constabulary at Iligan. The location of Misamis with reference to Tukuran on the south side of Mindanao in Zamboanga district enables combinations to be made between the two for suppression of trouble on the Lanao, Zamboanga, or Misamis sides of the line. So, too, the position of Iligan lends itself to combinations between the constabulary of Misamis and Lanao on the east shores of Iligan Bay and the region east of Lake Lanao. The Lanao constabulary has just returned from a punitive expedition to the Masibay and Nunungan country west of the lake, from which places the Moros have from time immemorial raided the Subanos of the Tukuran Valley and carried them into slavery. On the request of the governor of the Moro Province, and on the authority of the chief of constabulary, the senior inspector of Lanao has been detailed as secretary of that district, in addition to his constabulary duties. A very large part of constabulary work in Lanao has consisted of investigations conducted for the district governor, adjustment of differences between datos and sultans, the governor not having been stationed in the nominal capital of the district. This detail as secretary will give the senior inspector's actions a character more apparently official in matters outside of pure constabulary work and will add very little to the duties he has been continuously performing.

MISAMIS.

The constabulary of Misamis has 85 men and 3 officers. At present the stations occupied are Cagayán and Initao. A state of insurrection prevailed from July 1, 1904, until February of this year. With very slight aid from constabulary of other parts of the district, the trouble was entirely suppressed by Misamis constabulary. The activity was constant, officers and men seeing extremely hard service, hampered by lack of water transportation in a province whose great coast line and absence of roads made it almost a sine qua non, but bringing to a successful ending practically eight months of hostilities without a single complaint having been made of the conduct of any constabulary officer or soldier. The efficient administration of Capt. John J. Gallant, senior inspector of Misamis, has entirely redeemed that organization from the name it had in the days of Deserter Hermann, and he well deserves the confidence and reward of superior authority.

SULÚ.

This constabulary of 3 officers and 120 men has garrisoned Siasl and Bongao during the year and been responsible for order in the Sulú district south of Joló, the governor having made the senior inspector his representative in that region. There have been several minor expeditions to different islands of the Tawi-Tawi group after outlaws from Borneo and murderers among the Moros, and the senior inspector made systematic effort to suppress smuggling. An officer and 35 men of this constabulary have been on service in Batangas since February. The death of Capt. Thomas R. Hayson, senior inspector of the constabulary of Sulú, on May 11, murdered under peculiarly brutal and treacherous circumstances by one of his own men, cost the constabulary one of its best and bravest officers. Captain Hayson had the confidence of the governors of the province and district had won that of the Moros of the Sulú Archipelago, and his administration promised great progress for that unprogressive people. He had organized Moro courts at Bongao and Siasl, was presidente of the

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municipality of Siasi, and traveled far and wide among the Moros in the suppression of smuggling and maintenance of order. He was necessarily absent during nearly all of February and March, his station being commanded by his first sergeant in the inability of the undersigned to obtain an officer for assignment there. Without doubt the detachment got out of hand in that time, and certain recruits when approached by emissaries of hostile Moros on Joló embarked on the conspiracy which ended in Captain Hayson's tragic death. The murderer and accomplices were apprehended, tried, and sentenced within two weeks of the commission of the crime, 2 receiving death sentences, 4 receiving ten years each, and 1 receiving six years in sentence. Five constabulary soldiers and two other Moros were implicated. If the two soldiers condemned to death are promptly hung, the effect will be most salutary. Death in battle is not much dreaded by Moros, but the white horse that waits to bear to the arms of the hours the faithful who die killing Christians may gallop riderless from the scaffold of Moslems executed by the unbeliever.

Due to the fact that all men who could be spared from the two regular stations were in Batangas when the recent troubles occurred on Joló, the writer was only able to respond to the request of the governor of the Moro Province for 100 constabulary for field duty there by use of Company A, fifth district, and detachments of the constabulary of Zamboanga and Cotabato. The man Pala, against whom operations were directed, was a Moro who had committed a series of murders on Borneo and fleeing to Joló had gathered a nucleus of malcontents around him, principally of Moros who wished to avoid the cedula tax. The operations lasted about two weeks, the detachment of constabulary forming part of the expedition of troops under the personal direction of the commanding general of the department, and performing the duties assigned them in such manner as to win his commendation and that of many other officers of the army.

SURIGAO.

No expedition of magnitude has taken place in Surigao during the year. The presidente of Lianga, a remote town on the east coast, was murdered last November, and it was necessary to maintain a station there until May. Several minor expeditions have also been undertaken to Dinagat and neighboring islands, and one band of ladrones from Leyte was annihilated. A station has been established at Talacogon, a town on the Agusan River, 45 miles above Butúan, since December, and has enforced law in a region where American influence had not before penetrated. Many slaves have been freed, and disorders among Manobos have been suppressed.

ZAMBOANGA.

This constabulary has suffered from lack of a senior inspector about seven months out of the last twelve. It has never had an adequate number of officers since its organization. The stations are three, commanded by officers, one of which has two substations, and the other one. From its proximity to district headquarters this constabulary has had more than its share of detached service, having participated last August in operations in Misamis; in December and January, in Cotabato; in April and May, in Joló, and in June, in Lanao. The station at Tukuran has furnished numerous small punitive expeditions. The officer at Dapitan has been made the representative of the district governor in the whole north end of the district, which comprises a rich hemp region and a number of towns. There are no municipal police in that region, which necessitates two substations to preserve order near Libungan and Dipalog, where lawlessness has prevailed since Spanish times. Recently, on resolution of the legislative council of the Moro Province, the installment and conduct of the new provincial jail has been taken over by this constabulary. When necessary to use Company A, Fifth district, for detached service, Isabela de Basilan has to be garrisoned by the constabulary of Zamboanga.

GENERAL DUTIES.

The power conferred on the governor of the Moro Province under section 5, Act No. 787, of the United States Philippine Commission, to direct the use and control the movements of constabulary in the Moro Province, is so full and sweeping that there has been no hesitation in making use of constabulary under

his orders in ways not customary in other districts, and even in apparent conflict with orders from superior constabulary authority, such as guarding prisoners at work, serving subpoenas, guarding offices and safes, the jail, although not turned over under Act No. 610, etc. Officers have acted as representatives of district governors, and under confidential instructions of the provincial governor, etc., the idea being to make the constabulary useful to the highest degree possible.

MUNICIPAL POLICE.

Such portion of the municipal police as has fallen under the observation of the undersigned is among the poorest seen in three years of residence in the islands. There is none in the district which is believed to be worth its cost. Since the passage of Act No. 1283 of the Commission, requiring, among other things, that a request of the provincial or district governor shall precede any inspection of municipal police by constabulary officers in the Moro Province, there has been no such inspection.

The municipal police of Surigao has been placed under the senior inspector there this month, under the provisions of Act No. 781 of the Commission. It is believed that similar action in Misamis, and a little later in the Moro Province, would bring the municipal police to an efficiency toward which its advance is not now perceptible.

TRANSPORTATION.

For the regular trips of the disbursing supply officers the coast-guard cutters have been the dependence. From December 5 to March 18 Baganga, on the east coast of Davao, was practically out of communication, due to failure of the cutters to make that port. The *Ranger* has been on duty under the orders of the undersigned during the year; the *Troy* was on such duty until December. The *Ranger* is an excellent launch for the purpose for which she was built, that of a river launch in China, but is unsafe and unsatisfactory for the work required of her. During the present year she has been out of commission for repairs over one-fourth of the time. The assignment of the *Tablas* to duty at these headquarters on June 27 will permit the necessary inspections to be made in safety and decency, which was not possible with the *Ranger*, and leaves the latter available for duty elsewhere.

The small-boat transportation of the district has been reenforced during this year. Sailboats are now provided for the stations of Cagayan, Dapitan, Tukuran, Isabela, Mati, Siasi, and Bongao, those for the last two being of Moro make. Landing or row boats have been placed in Zamboanga, Misamis, Iligan, and Baganga. A gasoline launch, the *Captain Clark*, was supplied to the constabulary of Surigao, primarily to aid in the development of the Agusan River region, and secondarily for constabulary uses. This launch has in its secondary purpose been of great value. Its part in the development of the Agusan Valley so far has enabled a constabulary station to be placed and supplied at Talacogon, 45 miles above the mouth of the river, which has resulted in law and order being given to the towns in that region, including the freeing of slaves and apprehension of outlaws. To initiate a river traffic which should lead to the placing of a commercial vessel on that river, freight and passengers have been carried. They were carried free from November until April, and since that time at tariff approved by the honorable the secretary of commerce and police. The receipts are taken up on his account current by the supply officer at Surigao as refund to transportation Philippines Constabulary. The drought prevailing at the headwaters of the Agusan prevented the launch from ascending the river after the tariff was adopted until June, but the results of the two trips since made are very encouraging and indicate returns in a little while that will support the launch and soon reimburse the government for its original cost.

No animal transportation can be used in this district, except perhaps at a later date in Lanao and Misamis. All transportation not by water is by carrier, there being no roads for animal transportation except pack mules. The present work will not justify the maintenance of pack trains. Sufficient water transportation is, however, an essential to efficient transportation. Lanao, the smallest district composed of contiguous territory, is over twice the area of Cavite and Batangas combined, or a little larger than Delaware and Rhode Island together, and is bounded on two sides by water and has over 100 miles of coast line. The Sulú district, garrisoned by 120 constabulary, is composed of 188 islands scattered over an area of sea approximately 150 miles

long by 100 wide. Cotabato, with the largest river in the Philippines, has 300 miles of coast line; there is nothing but a rowboat on Davao Gulf, and no station in Lanao has more than a rowboat. Any part of the district, except Surigao, in case of emergency has to depend on the accident of favorable winds or the presence of a steamer going in the right direction. The sailboats above mentioned are good small boats with favoring winds, but with monsoons blowing continuously in one direction six months at a time and then six months the opposite way, are not satisfactory. It is believed the solution will be found in supplying auxiliary power to sailboats in the form of a small gasoline motor of about three horsepower, coasting, boat and all, about ₱1,200 each. This arrangement would be economical, consuming nothing when not in use and only used with failing winds or in emergency. The chief supply officer has been asked to include the purchase of four of these in his estimate for the ensuing fiscal year. If allowed, they will be assigned to Misamis, Sulu, Cotabato, and Zamboanga.

An experience of about six years in the Tropics convinces the writer that efficiency in an organization like ours can only be obtained by following up the execution of orders. For a young man alone in a remote tropical station to keep himself keyed up to work of temperate-zone quality with soldiers of Malay blood, without being frequently seen by his superior, calls for force and strength of character which are not commonly on the market at the price we pay for officers. A paper administration, with orders and reports, may be conducted from an office desk, but it will not bring efficiency in the Torrid Zone. If the constabulary are to be depended upon in our time of need, the district chief and senior inspectors must get around and see their stations. The boats recommended above—sail, with auxiliary power—will enable senior inspectors to do that as fast as boats are provided.

PERMANENT BUILDINGS.

The advisability of providing suitable buildings for the constabulary is suggested. Due to our occupancy of public buildings at stations formerly garrisoned by the army, the rent roll of this district is very small. At Bongao, Siasi, Isabela, Dapitan, Misamis, Iligan, Tukuran, Cotabato, Davao, and Mati, the constabulary occupy such buildings. These were turned over on abandonment by the military, subject to reoccupation, if necessary, and with the understanding that the constabulary would maintain them in fair repair. At all except the two first named the buildings are already insular property, the title to which will not lapse by our holding them subject to reoccupation by the military. The first two are United States military reservations and the buildings are United States property. The rent of barracks is saved by this arrangement at each station named, and rent for officers' quarters at all but one. At Zamboanga the district headquarters, including storehouses and the local constabulary, are in rented buildings, for which an exorbitant price is paid. The barracks, which rents for ₱75 per month, could have been bought new last year for ₱2,200; the headquarters building, for which ₱140 per month is paid, sold in January for ₱8,000, the rent in the former case being at 45 per cent per annum and the latter at 21 per cent per annum on value of property. No other building is available for district headquarters, and we have to vacate the present one in less than a year; nor is any other building available for barracks. The legislative council of the Moro Province has ceded to us the most desirable site in the vicinity, providing we erect buildings, the plan of which is approved by them, and begin work on them within a year from February, 1905. Plans for a district building which were approved were forwarded some time ago with request that an appropriation be secured and that building and a barracks be erected. This is in the interest of economy and the credit of the public service. A fine provincial building is being erected, a custom-house is planned, and private buildings of good style are constantly being built. The constabulary, the principal insular bureau represented here, is in shabby and unsuitable quarters, for which it pays extortionate rent.

MEDICAL ORGANIZATION.

A medical officer was assigned to the district last October, and replaced in January of this year by another. This officer has been used in inspections of the stations in the district, to accompany expeditions in the field, revise requisitions for medical supplies, distributing them from here when received, and

wherever possible has given professional attendance to those entitled to it. The enlisted medical personnel consists of 4 men transferred from local constabulary. A building is rented at ₱40 per month for a provisional hospital. The principal diseases to combat are beriberi and dysentery. There have been some wounded men to treat. The following table of distances by steamer from several constabulary stations to the nearest American medical assistance of any kind is worthy of consideration, remembering that steamers are few and irregular:

Isabela de Basilan from Zamboanga.....	16
Bongao from Joló.....	110
Siasi from Joló.....	38
Dapitan from Camp Overton.....	72
Talacogon from Camp Overton.....	159
Cagayán from Camp Overton.....	67
Surigao from Ormoc.....	109
Iligan from Camp Overton.....	4
Misamis from Camp Overton.....	29
Baganga from Cotabato.....	383
Matl from Cotabato.....	313
Dávao from Cotabato.....	297
Tucuran from Cotabato.....	50

The United States Navy have turned over the fine hospital building at Isabela de Basilan for our use as a hospital, but we have not been able to occupy it from lack of personnel. There is no constabulary or civil hospital of any kind within the limits of the district. In Surigao and Cagayán there is a native provincial doctor, but the services rendered are of doubtful value, and even that class of attendance can not be had in the Moro Province. It is recommended that the district surgeon be made a captain and surgeon, and that 3 medical inspectors be sent to the district for duty, one each to be assigned at Dávao and Siasi, and the third to be at Zamboanga, and eventually at Isabela when we can occupy the hospital there.

Such enlisted personnel should be provided as is necessary for a force of 810 men and 1 hospital. Common humanity to the men and officers who serve the Government calls for provision for their care when sick or wounded.

UNIFORM AND EQUIPMENT.

The uniform is satisfactory. The article most difficult for this district to obtain in sizes, quality, and quantity desired is shoes. They are the article the cost and rapid destruction of which used up the clothing allowance of the men and ran them in debt at nearly every settlement. This, with the beller gained from observation that good natural feet were being ruined by ill-fitting shoes, prompted the undersigned to order that all duty in this district should be performed in bare feet. The sandal is carried attached to the blanket roll when going on field service and used in unusually rough or thorny country. Shoes are permitted when off duty, and are worn on escort duty to Manila. The woolen puttees are proving more and more satisfactory and have been practically adopted by all officers of the army serving in this field in this district, and even United States soldiers have been seen with them cut out of their woolen blankets.

A bolo, or cutting weapon, should be provided each constabulary soldier, of the kind used in his home locality. Besides its constant use for clearing jungle, making shelters, etc., there is nothing that gives the Moro soldier confidence like the possession of the weapon on which his ancestors have depended for generations. If he never gets close enough to use it, he nevertheless feels that he has it if he should need it, and he knows the ladrone or other outlaw has one.

DISTRICT STRENGTH AND OFFICERS.

An organization into companies of 2 officers and 50 men each would be an advantage in this district. It would distribute the paper work, foster esprit du corps, incite competition between organizations, facilitate administration, and be more economical. Seventeen companies is the smallest number with

which the work can be handled if we are not by withdrawal to give up ground already gained and confess failure or indifference in the matter of civil government for the Moros. The work can not be done by deputy sheriffs, by municipal police, or any organization in our government except constabulary or United States troops. The constabulary work among the Moros is distinct from its mission in any other part of the archipelago. The policy has been, while maintaining order with as much force as necessary, to gain the confidence of the various datos and through them instruct their followers in the cruder forms of self-government; to free slaves; investigate slave cases; hear complaints and adjust differences between various chiefs or their followers, all the time encouraging them to cultivate land or seek work, and so in time become independent of the datos, and less liable to steal, murder, or sell slaves for a living. To effect arrests force is not used until pressure is brought to bear on the chief to give up wanted criminals has failed. The enlistment of Moros has already worked for civilization among them, in that the soldiers have acquired new habits, tastes, and ideas, which they are rapidly disseminating among their people. This Moro work means the patient listening to hours of conference so dear to the Moro heart; the careful earning of a reputation for justice; the unvarying command of self; the maintenance of a reserve in all intercourse with them; the permanence of officers in a locality, and the officer shall have his interest and heart in the work. It is performed in remote stations out of the glare of the lime light; always on the frontier of savage treachery, as, witness the death of Captain Hayson, and is not the class of work to win notoriety or even quickly show results. Whether this can better be performed by the constabulary, whose hope of permanency lies in doing this work well, whose limited forces encourage tact and diplomacy in handling Moros through their own people, whose men are often related by blood to the people among whom they are stationed, or by United States troops, whose tour in the islands is a passing one, whose permanency is not affected by the character of their work, and whose strength precludes the necessity of our methods, is for determination by higher authority.

The company organization, with an officer to each 25 men, will give a proper proportion of officers to men. The tribal and racial antipathies which, under capable white officers, may be played against each other to the increase of efficiency, forbid the control of stations by our noncommissioned officers. Lord Roberts, in speaking of the Indian army, said he had known many natives whose gallantry could not be surpassed, but he had never known one who would not have looked to the youngest British officer for support in time of difficulty and danger. This is true of our constabulary. The best noncommissioned officers we have instinctively look to a white face for control.

With minor exceptions, the officers of the district have done their duty well during this year.

The supply to the district is in all divisions more satisfactory than a year ago.

Seeds have been distributed, with a view to establishing gardens at all stations, to obtain better food for less money for subsistence of the enlisted men, and to spread the knowledge of proper methods of cultivation of garden crops.

School instruction has gone on steadily throughout the year at all stations when field service did not interfere. The distribution of school-teachers in the Moro Province has followed the distribution of constabulary, so that the services of American teachers have been available for constabulary instruction, a favor for which we are indebted to Dr. N. M. Saleeby, superintendent of education in the province.

Attention is invited to appendices "C," showing the working of the ration system to include March 31, and "D," giving the population of the district.

Very respectfully,

J. G. HARBORD,
Colonel, U. S. Army, Commanding District.

To the ADJUTANT-GENERAL,
Philippines Constabulary.

"A"

Return of enlisted strength, by race and district, July 1, 1904, to May 31, 1905.

Enlisted men.	Districts or provinces.							
	Surigao.	Misamis.	Davao.	Lanao.	Cotabato.	Sulid.	Zamboanga.	Company A, fifth district.
Loss:								
Killed.....	1	3				6	2	12
Died.....	3	2	8	5	2		3	24
Deserted.....				1	4			5
Discharged.....	10	18	2		5	12	21	69
Race:								
Moros.....			5	65	92	110	22	315
Bagobos.....			11					11
Subanos.....								14
Tagalogs.....	2	2	2		4			17
Visayans.....	92	75	54	3	1		23	252
Ilocanos.....							2	2
Ilongos.....								
Zamboanganians.....		7	2	3		5	8	112
Mandayas.....			39					39
Manobos.....			1					1
Yacans.....								5
Malays.....						1		1
East Indians.....						6		6
Total	94	84	118	71	97	122	143	779

Work accomplished, July 1, 1904, to May 31, 1905.

	Philippine constabulary.								Municipal police, Lanao.
	Surigao.	Misamis.	Davao.	Lanao.	Cotabato.	Sulid.	Zamboanga.	Company A.	
Expeditions.....	43	124	67	13	71	25	35	11	389
Miles covered.....	4,180	4,552	3,975	745	2,554	1,960	2,416	962	21,364
Encounters.....	7	15	1	2	6	4	4	2	41
Outlaws killed.....	9	55	5	2	16	4	18	23	132
Outlaws wounded.....	4	13	1		5	5		2	30
Outlaws captured.....	14	208			56	8			236
Convictions of same.....	8	125			35				168
Warrants received.....	17	15	33	5	9	2	123		209
Warrants returned "not found".....									
Warrants executed.....	17	15	25	5	6	2	120		190
Arrests without warrants, exclusive of outlaws captured.....	17	42	1	4		16			80
Cases awaiting trial.....	1	48	1	1	6				57
Escorts furnished provincial or other officials.....	5	5	2		10	1			23
Slaves freed.....	36		19	5	20	100			180
Slavery cases investigated.....	36		25	17	30	108			216
Deserters apprehended.....		2			1				3
Miles military telegraph line in province.....		3		45	90	50	100		258
Miles military telephone line in province.....			28		2				25
Miles civil telephone line in province.....		103		35					138
Enlisted men treated in military hospital.....		2	18	2	9	1		10	42
Convictions under Act No. 619 (summary court).....	6	28	3	10	51	53	59		210
Convictions under Act No. 619 (court of first instance).....	1	6				11			18

a Cable.

REPORT OF THE CHIEF OF PHILIPPINES CONSTABULARY. 127

" B "

Statement of arms, etc., July 1, 1904, to May 31, 1905.

Subject.	Lost by constabulary.						Captured or recovered by constabulary.					
	Surigao.	Misamis.	Davao.	Cotabato.	Sulu.	Total.	Surigao.	Misamis.	Lanao.	Cotabato.	Sulu.	Total.
Carbines, Springfield, cal. .45.....	2	2	.....	2	6	14	2	4	.....	.....	3	9
Belts, web, cal. .45.....	2	4	.....	1	.....	7	2	2	.....	.....	.....	4
Cartridges, carbine, cal. .45.....	120	500	.....	.....	620	.....	60	.....	.....	.....	60
Revolvers, Colts, D. A., cal. .45.....	1	1	.....	.....	.....	.....	1	1
Shotguns, assorted.....	12	8	.....	.....	15
Carabao.....	1	18	.....	19
Muzzle-loading tower guns.....	20	.....	20
Remingtons, assorted.....	8	8	17	.....	33
Spencer carbines.....	1	.....	1
Lantakas.....	10	.....	10
Rifles, U. S. magazine, cal. .30.....	1	.....	.....	.....	1	.....	1	.....	.....	.....	1
Revolvers, assorted.....	6	13	.....	.....	19
Lances.....	15	.....	.....	2	17
Bolos.....	100	.....	.....	2	102
Horses, native.....	2	.....	.....	2

NOTE.—Misamis municipal police lost 1 Remington rifle and captured 2; Sulu municipal police captured 1 Remington rifle; Lanao municipal police captured 2 carabao and captured or recovered 3 native horses.

" C "

Expenditures.

Constabulary.	Amounts drawn.				Ex- pended from savings.	On hand April 30, 1905.	Cash rations.	Cost of ration con- sumed.
	Quarter ended—		Period ended Apr. 30, 1905.	Total drawn.				
	Sept. 30, 1904.	Dec. 31, 1904.						
Company A.....		P 378.63	P 1,471.68	P 1,850.31	P 416.86	P 184.87	8,811	P 0.14½
Cotabato.....	P 1,546.84	1,145.13	2,365.86	5,067.83	512.29	233.85	24,085	.18
Lanao.....		748.19	1,296.05	2,089.24	602.25	248.98	9,711	.12½
Davao.....	1,086.72	2,951.55	2,775.79	6,794.06	68.62	558.82	32,353	.19
Zamboanga.....	3,070.42	2,860.04	3,168.80	9,099.26	1,472.78	122.97	43,830	.17½
Sulu.....	1,406.12	1,950.90	1,998.78	5,355.80	394.96	1,271.53	25,504	.14½
Surigao.....	1,996.20	1,415.40	1,787.33	5,148.93	.....	362.91	24,519	.19½
Misamis.....	2,722.50	2,155.44	1,559.88	6,437.82	42.45	1,396.47	30,656	.17½
Total.....	11,808.80	13,600.28	16,374.17	41,783.25	3,510.20	4,370.40	198,969	a. 17

a Average cost each ration.

Statement showing for what general purposes mess savings were expended by the various constabularies of the fifth district during period July 1, 1904, to April 30, 1904.

Constabulary of—	Athletic goods.	Cooking utensils and mess prop- erty such as plates, knives, etc.	Beds, mos- quito bars, lockers, tel- escopes, etc.	Tailoring, cigarettes, cedulas, laundry, and sundries.	Total.
Misamis.....	.....	.....	.....	P 42.45	P 42.45
Davao.....	.....	P 28.60	P 16.12	24.90	68.62
Lanao.....	P 166.20	26.00	282.35	127.70	602.75
Sulu.....	.....	13.00	237.45	144.50	394.95
Zamboanga.....	.....	.....	500.00	972.78	1,472.78
Cotabato.....	18.75	28.26	124.96	340.33	512.29
Company A.....	.....	26.51	161.00	229.35	416.86
Total.....	184.95	122.37	1,320.87	1,882.01	3,510.20

" D "

Population of fifth district, Philippines constabulary, by the census of 1905.

Island.	Popula- tion.	Island.	Popula- tion.
Alicai.....	86	Obian (Tawi-Tawi)	4,780
Babuan.....	20	Bababag	58
Balahambat.....	98	Pandukan	253
Banaran.....	170	Pangasinan	37
Bangaan.....	254	Pangipuyan.....	76
Basilan.....	27,017	Panubigan.....	214
Bilanbilan.....	134	Paorgutarang	690
Bilatan.....	190	Paquita.....	46
Bohan.....	79	Pata.....	960
Bongao.....	292	Pilao.....	532
Bubuan (Basilan).....	18	Sakinbong.....	300
Bubuan (Joló).....	180	Salado.....	5
Bucus.....	810	Salupin.....	111
Buluan.....	38	Sámal.....	1,095
Cabingan.....	2,100	Sanga Sanga.....	260
Caboogan.....	96	Santa Cruz (Grande).....	60
Cagayan de Joló.....	2,000	Siargao.....	9,556
Camiguin.....	30,750	Siaf.....	11,877
Dinagat.....	5,243	Sibago.....	40
Dongdong.....	120	Sibutu.....	290
Joló.....	44,718	Silinog.....	45
Kabucan.....	30	Simonor.....	1,320
Kahulugan.....	200	Sinoonuk.....	16
Kapual.....	200	Sitankan.....	600
Lamenusa.....	2,270	Sumboy.....	179
Lampinigan (Basilan).....	318	Tabawan.....	630
Lampinigan (Zamboanga).....	106	Tabtabun.....	291
Lanabuan.....	26	Taganito.....	411
Langdang.....	250	Tambagaan.....	1,000
Lapac.....	1,100	Tamindow.....	275
Latecan.....	670	Tandubas.....	1,840
Laulico.....	223	Tapiantana.....	605
Lagus.....	4,890	Tapul.....	450
Malamaul.....	847	Tara.....	165
Malanipe.....	313	Tataán.....	65
Manangal.....	76	Tawi-Tawi.....	1,179
Manoke Manka.....	120	Tongull group.....	1,000
Matabuan.....	530	Tulalan.....	500
Manubol.....	1,600	Tumalatab.....	25
Mantage.....	87	Usada.....	101
Mindanao.....	499,634	Other islands not named (Joló).....	200
Montserrat.....	509		
Obian (Joló).....	4,780	Total.....	670,798

EXHIBIT 6.

REPORT OF OFFICER COMMANDING PROVISIONAL DISTRICT, PHILIPPINES CONSTABULARY.

HEADQUARTERS PROVISIONAL DISTRICT,
PHILIPPINES CONSTABULARY,
Bacoor, Cavite, July 31, 1905.

SIR: I have the honor to report what work has been done in this district since its organization.

The writer having been assigned the task of coping with a condition, makes no attempt to analyze or suggest, but limits himself to the narration of facts and results. While the work attempted involved constant observation, study, and reflection, the inductions made and ideas deduced would but weary the reader and serve no useful purpose.

INTRODUCTION.

With the cessation of the last rainy season, the ladronism, always existent in these provinces, increased rapidly and to an unusual strength. Its growth was favored by the weak state of the scout companies, all of which were in process of recruitment and reorganization, and by the weakening of the constabulary to conform with law and to combat the pulajan outbreak in Sámar,

INFECTED DISTRICT.

The region affected is a rolling country, free of dense forests or considerable mountains. The uncultivated tracts are overgrown with jungle or with cogon. There are gradual slopes east and west to the China Sea and to the Laguna de Bay, and more marked ones both north and south from the Talisay ridge. The rivers and creeks cut deep in the chalky soil. Lake Taal sets like a bowl in northern Batangas. The population is Tagalog. In most of the pueblos there is a mestizo element, the foreign blood being Spanish or more often Chinese. The social structure is oligarchic. The principal class holds its position, some through birth, but more through wealth, education, or influence. Practically all of them, including those who also follow trades or professions, own land. Dependent upon and subservient to them are the common people—taos, and the peasants, *aparceros*. Opportunity, propinquity, and especially debt, establishes the relationship. Some *principales* handle their dependents direct, but most of them do it through overseers and other confidential agents—*encargados*. Chinese and other foreigners are found in most towns, and especially in the commercial ones of Santa Cruz, Calamba, Batangas, Cavite, Imus, and Pasig. They little affect the life of the people, which is agricultural.

LADRONISM.

Throughout the four provinces *ladrones* in varying numbers and with varying success have always plied their trade. It is that of robbery. The favorite spoils, because easily lifted, transported, and marketed, are carabaos and ponies. Ladrone bands are mostly local; though they sometimes make distant raids, each claims and usually lurks about its own or a group of pueblos. As to origin: Sometimes a fugitive from justice, or a lover of the life, gathers a band and establishes his own base and connections; sometimes a ring of *principales* organize a band for their own protection, profit, or both. The band which guards one pueblo does not hesitate to prey on another which has none, or an unfriendly one. Pueblos, barrios, and individuals often purchase a precarious immunity by contributions in money or kind. The bulk of the contributions and loot finds its way to the fences, who in Batangas are called "*inahins*" and in Cavite "*pillos*." They in turn divide with the backers of the band, who are not infrequently rich and prominent and sometimes are municipal officials. In so devious and secretive a manner is a band organized, recruited, supplied, led, and directed that even the *inahin* who acts as go-between may not know the leader of the band or its real backers. Most of these leaders took part in the insurrection, and a few of them, including Julián Montalón and Felizardo, have never surrendered nor taken the oath of allegiance. All of them assume titles, and the organization and interrelations of the bands are theoretically military. However, the members wear no uniform, and when pressed hide their arms and mingle with the general population. While they do not hesitate to maim and kill peasants and laborers who incur their enmity, they content themselves with maltreatment or abduction of more prominent natives, and rarely molest foreigners. The bands are usually recruited from the ne'er-do-wells of town or country, from misguided youths and ignorant dupes. Those in this section simulate a political purpose. They pretend allegiance to an ex-barber, Macario Sakay, who, as self-appointed president of a Philippine republic, hides around Bosoboso.

LADRONE HIEBARCHY.

In Batangas the band of Colonel Villanueva was recruited from and lurked around Bauán. That of Lieutenant-Colonel Vito based itself on Taal. Major Flores infested the neighborhood of San Pablo, Laguna. All of these were nominally directed by Brigadier-General Oruga, whose own band terrorized especially the jurisdictions of Tanauan and Lipa. The bands of Lieutenant-Colonel Caro about Das Mariñas and of Major Girón about Silang acknowledged the authority of Major-General Felizardo, who frequented the triangle between Pasay, Muntinlupa, and Bacoar. Both Oruga and Felizardo owned the leadership of Lieutenant-General Montalón. To him also reported direct Lieutenant-Colonel De Vega, who afflicted San Francisco de Malabón; Colonel Ramos, whose band gave protection to Magallanes, Maragondon, and Nasugbu; and Colonel Masigla, who lorded it over Indang. The band of Montalón itself

picked its members widely from Batangas, and especially Cavite. His "head-quarters," usually moving, preferred the deep wooded ravines about Buena-vista, in Cavite, and the rugged hills between Talisay and Bayuyungan, in Batangas.

METHOD OF ATTACK AND DEFENSE.

Rarely do outlaws attack armed detachments, whether camped or moving, unless they are very small or careless. They prefer to rush a police station, a constabulary cuartel, or a scout post when it is weakly guarded. Such attacks are invariably made between dusk and bedtime, when the officers and men, having supped, are prone to scatter for recreation. The attempts are always preceded by a thorough spying out of the surroundings, strength, and habits of the intended victims, a careful weighing of chances, and a deliberate planning. Consequently an enterprise once undertaken seldom fails. Frequently they try to minimize the risk of jumping a police station or looting a municipal treasury by establishing relations with and winning confederates on the inside.

When attacked they generally scatter hotfoot; even the few who sometimes make a stand do it half-heartedly and only to cover the flight of the leaders.

In my time there have been but two encounters that could be dignified as skirmishes, and in both the ladrones had the luck with them and expected success. Always in these parts, when government detachments attack, the proceeding is about as serious and prolonged as the flushing of a covey of quail. Hits were made at the first fire. Our casualties have been few, but the defective outlaw ammunition has made them severe. Ladrones do not fancy infighting, and only the fleet Moro or Igorrote has been able to get hand to hand with them.

The chiefs seldom lead in attack, but usually direct from a safe distance; so, too, they never stand in retreat, but flee first.

Generally the bands move at night and sleep by day. They avoid roads and even ordinary trails, but follow little defined paths that curve, double, and twist. Their service of security and information is most practicable and efficient.

LADRONE SUCCESSES.

The night of November 12 part of Felizardo's band attacked the police station and the scout quarters at San Pedro de Tunasán. They killed 1 policeman, wounded a hospital corps private, 1 policeman, and 2 secretas; effected the escape of a prisoner, and secured 3 shotguns. Finally, their leader, Poblete, was mortally wounded, and they left.

November 27 a party of Malahi Island prisoners, while being taken to their work, killed the guards and escaped to Laguna. Two of them had been killed and 2 mortally wounded. Of the remaining 29 those who were not recaptured or killed joined Oruga's band.

December 8 the sergeant in command of the constabulary cuartel at Parañaque was absent and many of the men attended a town fiesta. In the early evening Felizardo quietly surrounded and seized the cuartel, killing a corporal and wounding 2 privates. He left at his leisure with 15 Springfield carbines, 4 revolvers, and considerable ammunition. Near Las Piñas he robbed 2 American travelers of their watches and money.

In consequence of these mishaps Major Shanks, the provincial governor, was, by agreement between the governor-general and the division commander, assigned to the command of all scouts and constabulary in Cavite. The constabulary exposition battalion, en route from the United States, was also diverted to that province.

The monotony of disaster was broken near Alfonso by Grayson's constabulary, which killed Major Alvarez and dispersed his detachment of Masigla's band.

The evening of December 16 a sergeant's patrol of 8 Batangas constabulary encamped at Maquina. While preparing supper they were attacked by the bands of De Vega and Masigla, who wounded the sergeant and 3 men, dispersed the whole, and captured 2 carbines and 1 revolver.

The writer spent holiday week studying conditions in Cavite and Batangas and mending fences.

Among the proprietors there lingered some resentment at the land tax, but more at the values at which it had been assessed.

On the masses the new currency had produced the usual oriental distrust of change.

The continual assaults of the native press on the innovation of an internal revenue had interested the few who read. As they were not immediately concerned or touched it not perturb them.

Office seekers, idealists, and the dwindling remnant of irreconcilables were pleased at the increase of lawlessness; they hoped that it would disgust the Government and give them an opening to power and spoil.

However, the great bulk of the people—the shopkeepers, mechanics, tenants, and laborers—wanted quiet and safety—to be let alone. The general prosperity, assured by the most abundant and extended harvests since the war, both confirmed their desire and strengthened their position.

Notwithstanding the exaggerated successes of the ladrones, the agitation of irresponsible agents, and the credulous and emotional nature of the Filipino, comparatively few, and none of wealth, prominence, or education, had openly supported the outlaw bands.

About sunset of January 15 Montalón, with his own and the bands of Vito, Masigla, and De Vega, marched up the main street of Taal, disarmed the municipal police, who made but a semblance of resistance, murdered one of them, and looted the municipal treasury. Most of the townspeople remained quietly in their houses, but some openly fraternized with the bandits. The latter finally departed with 20 rifles, 15 shotguns, and about ₱7,000.

When news of this raid reached Manila the provinces of Cavite, Batangas, Rizal, and Laguna were organized into a provisional district, and the chief supply officer, the only assistant chief available who could command both scouts and constabulary, took charge of it. His headquarters were established at Batangas, but moved successively to Tanauan, Lipa, and Bacoar.

Reinforcements of Ilocano, Igorrote, Moro, Manila garrison and mounted troop constabulary, and what officers could be squeezed from other districts, were brought in. The strength and distribution of the scouts and constabulary on January 1, of the regular troops, scouts, and constabulary on February 15, and of what forces are still engaged in the work, are shown in Exhibit A.

POLICY PURSUED.

Of the policy determined on the salient features were:

To render the Government forces less vulnerable and more capable of offense by collecting them into fewer but carefully selected, strong, and well-officered stations.

To intrust to particular stations or groups of stations the extinction of specific bands of outlaws.

To undertake a campaign of education in meetings, discussions, and gatherings of officials and people to make clear the purpose of recent legislation, and to show the shame, cruelty, and futility of ladronism.

To gain the cooperation of the principales, and through them of their dependents, not in fighting, but in spying out and locating ladrones, and thus to do away with a secret service against which there were many complaints, depending for information upon the people themselves.

REGULAR TROOPS ASSIST.

While these measures were being initiated Oruga was repulsed January 12 in an attack on the scout post of Talisay, where he lost 1 captain, 6 men, and 3 revolvers.

However, in the twilight of January 24, the bands of Montalón, Felizardo, De Vega, Masigla, and Vito raided San Francisco de Malabón. Of the considerable constabulary there stationed, some were preparing for a night hike; others, including the officers, were scattered through the town, eating or lounging. The discipline was lax, and little precaution was taken against surprise. A small detachment of scouts, engaged in shipping army property, formed no part of the garrison, but took part in the fighting that followed.

The ladrones, those disguised in constabulary and scout uniforms in the lead, rushed the cuartel, and then most withdrew to the far side of the plaza and kept up a fire on the garrison, which had rallied about the cuartel and officers' quarters, while others looted the house and seized the wife and two little children of Mariano Trias. He himself escaped by flight. The outlaws withdrew in good order, divided their plunder, and then scattered. The loot consisted of Trias's money and jewelry, ₱2,000 of municipal funds, over 1,000 rounds of ammunition, and 25 carbines. In the skirmishing Contract-Surgeon O'Neill

and 1 constable were killed and 3 constables wounded. The outlaws aggregated many and their own loss was considerable, but no reliable information as to their strength and casualties has been obtained.

The next day, at the request of the governor-general, Sibley's squadron of the Second Cavalry and Wright's battalion of the Seventh Infantry were sent to Cavite to cooperate with the civil authorities. The moral effect of these troops not only in Cavite, where they took station, but also in Batangas, was decisive. The cooperation given by their commander, Major Sibley, was thorough and cordial. They bore an active part in the work and some of the best of it they did. Recently they have been withdrawn, because the dwindling of the *ladrones* to a mere remnant, illy armed, has reduced the task still before us to one of police only.

SUSPENSION OF THE WRIT.

The last day of January the chief executive proclaimed the suspension of the writ of habeas corpus in Cavite and Batangas. The growth and spread of lawlessness necessitated this action. The people feared for their lives and property. For a long time large tracts of land had lain fallow in the unsettled districts, especially about Bayuyungan in Batangas and Paliparan in Cavite, because the owners and tenants were afraid to work them. Now the abandonment of outlying fields and the narrowing of industry that involved travel commenced about most of the towns. From Lipa and other places the upper class was sending its women folks to the provincial capitals and even to Manila for safety. Assassinations were not infrequent, and abductions of peaceable men and women became common. The mutilating of those suspected of giving loyalty or aid to the government increased.

Suspension of the writ of habeas corpus proved an especially effective weapon in this case. Prior to the establishment of civil government by the United States the Filipinos had enjoyed no such privilege. Now its deprivation inspired a dread of consequences, all the greater because they were unknown.

As a matter of fact no one was arrested except upon reasonable suspicion, and usually upon some proof of guilt or complicity. But practically the measure has proved of great assistance; the arrested law breakers can not of right obtain bail and again free resume their practices and intimidate the witnesses against them. Moreover, the small and overworked body of officials and officers are not compelled to divide their time between the courts and their present more exigent duty of ferreting out, running down, and destroying the *ladrone* bands.

It has also proved an instrument of mercy—not the deterrent penalty of the occidental, but the atonement of the oriental is the punishment best understood and justified by the Filipino. Many of those who had confessedly sinned were encouraged to make atonement by giving their influence, by obtaining information through their previous connections, or by abstaining from obstructive tactics.

The policy has been not to crowd the jails, burden the courts, and fill Bill-bid, but to reform all except the confirmed or notorious sinners and to practice the people in citizenship.

WEARING DOWN OF THE LADRONE BANDS.

Details of the work that followed would needlessly swell this report. They are tabulated in the attached record of events and lists of *ladrones* and of arms that have been accounted for.

These exhibits are defective in that they give no indication of the weary waits for information, the hard and usually profitless marches, the carefully planned but generally indecisive attacks, the tedious and often fruitless negotiations, and the patient but often disappointing efforts to induce the people to free themselves from the irresponsible bondage of *ladronism*.

In these trials all—Regulars, scouts, and constabulary—shared alike; and the good comradeship and understanding thus established assured ultimate success. Nor should the assistance of the provincial authorities be overlooked. Some of the most desirable ends were accomplished by Governor Cailles and his well-trained police.

But, on the whole, the record is one of hard, patient, and monotonous toil. Seldom is it broken by incidents such as the crushing of Oruga by the constabulary of Thompson and Baker and the fierce pursuit of Johnson's Moros at Calicangan, the night encounter at Tres Cruces, where the cavalry killed

Cosme Caro, and the deadly pounce of Van Schaick and his scouts on Felizardo's lair at Lit-lit.

In March, after the harvesting of the crops, reconcentration, in name, at least, was resorted to in many parts of Batangas and Cavite and in some parts of Laguna and Rizal. The extent and degree of each reconcentration was adapted to local conditions and necessities. In no case were the rigors or penalties of a technical or much less of a popularly understood reconcentration enforced. Even these were relaxed and done away with as results justified. At the end of July, because of the very small number of outlaws still out, and that all might profit by the increased arable areas that the narrowing of lawlessness made available, what reconcentration still remained was lifted.

In April the undertaking of the destruction of Julián Ramos's band led to the arrest of a wealthy landowner, Roxas, and his hacienda agent, Oliva. Soon afterwards some of the native newspapers commenced a campaign against the constabulary that became daily more bitter and reckless. The bringing of criminal libel suits against the *Renacimiento* has somewhat checked them, and has at least given the constabulary officers a chance to defend themselves.

Summing up what has been accomplished: 518 of firearms have been captured, seized, and surrendered; of these there are 170 rifles, 72 carbines, 64 shotguns, and 212 revolvers; the guns are to the revolvers as 3 to 2; 224 of these came from Batangas, 185 from Cavite, 61 from Laguna, and 48 from Rizal. Of them the army obtained 38, the scouts 42, the constabulary 406, and the police 32. Ladrões: 5 officers and 44 men, a total of 49, have been killed; 12 officers and 87 men, a total of 99, have been captured; and 60 officers and 214 men, a total of 274, have surrendered. Of the aggregate of 422 killed, captured, and surrendered, the army accounted for 53, the scouts for 38, the constabulary for 310, and the police for 21. Of them, 69 belonged to the band of Oruga; 34 to that of Flores, which is now extinct; 20 to that of Masigla, now extinct; 13 to that of Girón, now extinct; 38 to that of Ramos, now extinct; 65 to that of Montalón; 13 to that of de Vega; 11 to that of Sakay; 35 to that of Felizardo, now reduced to himself; and 25 belonged to obscure or unknown bands.

A considerable share of the results obtained by the constabulary at Taal and Nasugbu and indirectly of those at other points should be credited to the coast guard cutter *Mindanao*, Captain Cahling, whose ready cooperation made them possible.

All officers, and especially the district chief, were greatly assisted in legal questions, in sifting evidence and in handling prosecutions, by the advisers that were detailed by the attorney-general. Mr. Harvey proved indispensable.

CONCLUSION.

Of the remnant of the ladrões, Sakay frequents northern Rizal, which at the end of June was returned to the first district. Felizardo, disarmed and stripped of companions, lurks between here and Manila. De Vega and his remaining followers skulk in the forests of Buenavista and Jalang. Montalón who has been joined by Natividad's remnant of Oruga's band, is hidden now here and now there by the *Cólorum* society.

Excluding Sakay's band, there are only 15 outlaws with 13 guns at large in this district: but among them are Montalón, the most conspicuous; Felizardo, the most active, and De Vega, the most notorious.

What results have been obtained were in large measure due to the hard and unselfish work of Major Shanks, governor of Cavite; to the insight and judgment of Captain Baker, of the constabulary; to the dash and energy of Captain Van Schaick, of the scouts; and to the intelligent activity of Lieutenant Walker, of the scouts, and Lieutenant McLean, of the constabulary.

Acknowledgment should also be made of the advice and assistance given by Colonel Chase, until recently in command of Camp McGrath, by Major Duncan of the scouts, by Doctor Roxas of Lipa, by Doctor Lontoc of Taal, by Mr. Trias of San Francisco de Malabón, and by Mr. Baldomero Auginaldo of Binacayan.

Respectfully,

D. J. BAKER, Jr.,
Assistant Chief, Commanding
Provisional District, Philippines Constabulary.

To the ADJUTANT-GENERAL,
Philippines Constabulary.

EXHIBIT 7.

REPORT OF THE CHIEF SUPPLY OFFICER, PHILIPPINES CONSTABULARY.

HEADQUARTERS PHILIPPINES CONSTABULARY.

OFFICE OF THE CHIEF SUPPLY OFFICER.

Manila, August 1, 1905.

SIR: I have the honor to submit the following report for the fiscal year ended June 30, 1905:

This office purchases all supplies necessary to feed, clothe, arm, equip, and quarter the constabulary, prepares estimates for funds, provides for payment of officers and men, furnishes medicines and medical supplies for the sick, constructs and repairs telegraph and telephone lines for use by the insular government, conducts civil supply stores in almost every provincial capital for the sale of commissaries at reasonable rates to government employees, transports all government supplies between the coast or nearest railway station and Baguio, supervises and coordinates the supply divisions, and distributes all stores and funds to the 46 provincial and district headquarters.

This varied and vast amount of work is handled principally through 6 divisions, under the immediate supervision of the chief supply officer. The paymaster's division disburses and transfers funds; the commissary division receives, sells, and transfers commissaries and subsistence stores; the ordnance division issues and transfers ordnance and ordnance stores, repairs, reblues, and cleans arms, manufactures and repairs horse equipments; the medical division handles medical supplies for the provinces, maintains hospitals, and treats the sick; the quartermaster division handles all quartermaster supplies, clothing, shoes, etc., and provides transportation for officers, enlisted men, and supplies; the telegraph division constructs, maintains, and repairs telegraph and telephone lines for the insular government.

Purchases for the year, shown in detail in the reports of the various division chiefs, and amounting to something over ₱2,000,000, were generally made in large quantities by contract after advertising, and principally from Philippine merchants. This policy, it is believed, has resulted in economy to the government and satisfaction to the merchants.

Experience has shown that certain staple stores, the use of which is general and not confined to this bureau, can be more advantageously obtained from the insular purchasing agent, and accordingly all imported forage, lumber, most all leather, cleaning supplies, and hardware are purchased from him. There have been secured from this source alone stores amounting to a quarter million pesos.

Of course all ordnance and ordnance stores have been purchased through the insular purchasing agent. Of necessity they must be secured in the United States. The constabulary can not purchase direct, and, if it did, has no facilities for handling and transporting supplies to the Philippine Islands.

In cases of emergency, medical supplies, clothing, equipage, ordnance stores, and ammunition have been secured from the United States army depots in Manila. In this the medical, ordnance, and quartermaster departments have proved to be accommodating and ready to assist us whenever and wherever practicable.

In order to provide for the many emergencies incident to this service, authority to make purchases in open market in amounts less than \$1,000, United States currency, has been obtained, and from time to time as occasion demands, small quantities to fill immediate needs are purchased. However, this practice is discouraged wherever practicable, as it is both costly and unsatisfactory.

In the constabulary all supplies, except for the telegraph division, are ultimately distributed through the provincial supply officers. They submit quarterly requisitions for such supplies as are needed, except for funds, for which they generally requisition once each month, as it is not believed to be good policy to have excess funds in the hands of supply officers. The requisitions are filled in the divisions receiving them and supplies are turned over to the quartermaster for shipment. Owing to the nature of this service it sometimes becomes necessary for supply officers to submit special requisitions. This practice is discouraged and only in cases of emergency and upon the approval of the district chief are they filled.

Disbursements of funds are made by the paymaster in Manila, the district supply officer at each district headquarters, and the supply officer at each provincial headquarters.

The distribution of supplies by the various supply officers is made subject to regulations promulgated in orders from constabulary headquarters from time to time. The disbursement of funds for routine and ordinary expenses is governed by general orders. Expenditures not covered by orders or unusual in amount or kind are made upon the authority of the chief of constabulary, the chief supply officer, or district chief.

There is assigned to each province one supply officer, except in the fifth district and in the province of Tayabas. In the fifth district there are a supply officer and an assistant supply officer at Surigao, who pay and supply all the troops in northern Mindanao. In Zamboanga there are a district supply officer and two assistant supply officers, who pay and supply all southern Mindanao and the Sulu Archipelago. In Tayabas, on account of its immense size, there are a supply officer and an assistant supply officer. Because of disturbed conditions in Samar for the past six months there has been an assistant to the supply officer in that province.

This system at first glance would seem to be a most intricate and novel one, but it differs from that in the Army only in name and in segregating to district and provincial headquarters the distribution of supplies. The carrying out of the work depends largely upon the officer to whom intrusted, and it sometimes has proved that those charged with this duty are dishonest or incompetent. While the casualties among this class of officers, considering the number employed have been very few, yet they have a tendency to create a spirit of unrest and suspicion among others. Many of the derelictions have been due, not to bad morals or thieving propensities, but to lack of proper education and of training in responsibility and to relaxing and enervating environment. While there has been no condonation of guilt or compromise with justice, it is believed that present laws for such crimes are too severe.

The duties of a supply officer are many and varied. All payments within his province, except salaries and reimbursements to officers, and those for secret-service work and medical services are made by him. He is the commissary officer, charged with requisitioning for, caring for, and selling all commissaries; he is the quartermaster, requisitioning for, receiving, and distributing all quartermaster supplies; he is the ordnance officer, and, where there is no constabulary hospital, he receives and distributes medicines and medical supplies; and if there is no district telegraph officer, he receives and distributes telegraph and telephone supplies.

Each class of property above enumerated is received from different division chiefs, and must be accounted for on separate returns. In receiving, handling, issuing, and distributing property some is lost, some deteriorates from climatic influences, some is worn out through fair wear and tear, and some is stolen. A great deal of it is issued for use to the officers and enlisted men in the province, and must of necessity be issued on memorandum receipts, the officer or enlisted man to whom it is issued being responsible to the supply officer for its care and preservation. However, it sometimes becomes lost, and sometimes, owing to the exigencies of the service, an officer and a body of enlisted men are hurried out of the province and property is lost in actual service. For all this the supply officer, under the law, is accountable, and must of necessity secure relief for such supplies as become lost, etc. To do this he notifies the chief supply officer, generally by letter, who immediately requests the executive secretary to appoint a committee or an inspector to act upon and determine the responsibility for loss or deterioration of property. A record of this is kept in the office of the chief supply officer.

The field from which supply officers are selected is limited. Young men brought over from the United States have had no previous training in this class of work, must learn the nature of this service, acquaint themselves with their environment, and accustom themselves to conditions before they are fitted for the duties of a supply officer. Some are obtained from other bureaus, while others are selected generally from noncommissioned officers of the Army. As a rule, those secured from other bureaus have had some military training and are fitted to take up the duties of supply officer at once, and up to the present have given satisfaction. Those secured from the ranks of the Army find it somewhat difficult in assuming the duties of a supply officer, as they are accustomed to army methods, but under the immediate control of a good senior inspector readily become acquainted with the work.

As they disburse and collect funds, supply officers, under the present law, must be bonded. District supply officers are bonded in the sum of ₱20,000, provincial

supply officers ₱12,000, and assistant supply officers ₱6,000. Immediately upon the appointment of a supply officer this office sees that he is bonded, that his premium is paid, and that a record of same is kept.

Supply officers are appointed third lieutenants, after competitive examination. Upon assignment to a province their allowance is fixed by the chief supply officer. The present appropriation provides for 52 supply officers, whose salary and allowances shall not exceed that for 9 at \$1,700, 21 at \$1,500, and 22 at \$1,300 per annum each. The allowance is fixed in accordance with the duties performed—that is, the supply officer in a large province receives more than one in a small province. This contemplates paying the position and not the man. The authority for hire of clerks to supply officers is obtained from the chief supply officer, and their salaries are fixed in his office.

The system now in vogue of having the supply officer accountable for all property in a province is not satisfactory. It is impracticable, for the reason that officers and troops are moved from place to place without the knowledge of the supply officer, who is accountable for property they have in their possession. At first glance this would seem to be a small matter, but owing to the many men and officers that are moved in the course of a year, and because of carelessness on the part of officers in the giving and taking of memorandum receipts, there are brought about a great many tangles and discrepancies in property, and in many cases it has proved very costly to the officers, and sometimes to the supply officer. It is necessary in cases of this kind to investigate the whereabouts of the property, if practicable; if not, to determine who is responsible and whether it is a case that would need an inspector or a committee. It requires considerable time and correspondence in this office to disentangle and adjust these property differences.

In this office are drafted orders intended to improve the fiscal administration of the bureau, such as regulating the issue and amount of clothing, oil, stationery, etc., the disposition of captured arms, and verification of funds in the hands of supply officers. Decisions on all points affecting the distribution of supplies and disbursement of funds, when no legal question is involved, are rendered from this office. It sometimes becomes necessary for supply officers to make unusual or exceptional disbursements, the propriety of which to their mind is in doubt. In such cases they submit the matter to the chief supply officer for his opinion. This also occurs in the distribution of supplies and in expending property.

Under the provisions of General Orders, No. 92, series of 1904, it is incumbent on senior inspectors at the end of each month, and before the supply officer renders his accounts current to the auditor, to count and verify the cash of the supply officer and to submit to the auditor, through the chief supply officer, the report on blank form for that purpose. Upon receipt in the office of the chief supply officer these reports are recorded and forwarded to the auditor. In cases of dereliction senior inspectors are notified by the chief supply officer, and requested to forward report with explanation of delay. Senior inspectors do not seem to realize the importance of this report. If the inspection of funds were made as provided, it would be very difficult for supply officers to cover any defalcation. It does not require an examination of accounts, but a verification of them, and any large defalcation would be instantly discovered.

Under the provision of resolution of the Philippine Commission, dated November 14, 1904, the honorable the secretary of commerce and police directed the establishment of a stage line to operate between Dagupan and Bagulo for the transportation of passengers, and, in order to give the Manila public the benefit of the line, coupon tickets, entitling the holder to transportation from Manila to Bagulo and return and to meals and lodging while en route, were printed and sold in the office of the chief supply officer. Details of this service will be given under the quartermaster division.

Act No. 1225, under the subhead of appropriation "transportation," provides that the bureau of Philippines Constabulary shall furnish official transportation from the coast or nearest railway station to Bagulo for all government supplies except for Benguet road and improvements. In view of this supplies for all bureaus were transported to Bagulo during the fiscal year at a cost of ₱39,504.34, exclusive of the cost of maintaining and operating the pack trains and spring-wagon service between Dagupan and Bagulo.

The administration and supervision of the supply divisions and the distribution of stores and funds to the district and provincial supply officers for further distribution necessitates a voluminous correspondence, notwithstanding the fact that in dealing with the six supply divisions the telephone and un-

recorded memoranda are used whenever practicable and that the division chiefs on all routine matters correspond direct with those concerned.

The records of correspondence were formerly kept in this office, but all records have recently been transferred to the record division, under the immediate control of the adjutant-general.

The paymaster's division has disbursed ₱1,609,989.02 and transferred to the various supply officers ₱2,959,310.76; in other words, handled ₱4,569,279.78. In doing this there has not been 1 cent of loss, the law has been complied with, and rules and regulations of the auditor lived up to.

Complaints have sometimes been received of slowness in getting funds to outlying stations, thus delaying the payment of obligations and impairing the credit of the service. This was due to causes some of which were and some were not avoidable. It was never due to delay or inefficiency on the part of the paymaster's division, but generally to the supply officer's delay in submitting requisition for funds, in asking for amounts in excess of that required, or in failing to file authority for expenditures, which necessitated correspondence before requisition was filled.

Due to the limited appropriation for the constabulary and to the fact that funds are distributed to 49 districts and provincial supply officers, it is imperative that no funds in excess of the amounts required be transferred to supply officers, and in order to avoid this it sometimes becomes necessary for the paymaster to hold a requisition until he is satisfied that the funds asked for are actually needed. Particularly is this true toward the latter end of a fiscal year, or when funds begin to run short under any subhead of appropriation.

Beginning with this fiscal year the paymaster was directed to keep a record of disbursements made throughout the constabulary and to divide the subheads of appropriation into classes, in order to show the expenditures made for each item that would admit of classification. To do this a form was printed, "Report of disbursements," to be submitted by the supply officers monthly; but, on account of the failure of a few officers to do this and because of several defalcations, he was unable to obtain complete and accurate information. This data is necessary for the preparation of estimates, and without it it is necessary to combine the data of this office and that of the paymaster's, in order to get a working basis.

For the ensuing fiscal year the Commission has passed an act continuing the present appropriation until the next appropriation shall have passed; thus the paymaster's division will be enabled to transfer to outlying districts without delay funds for the ensuing fiscal year.

This division cost about ₱10,000. It is efficient, and its work is satisfactory in every respect.

Considering how economically the paymaster's office is run and the amount of work done other than disbursing, it is not believed that it will effect a saving to transfer it to the bureau of disbursing now contemplated. A clerical force almost equal to that now employed will be necessary to carry on work now performed in this division—that is, transfer of funds to supply officers, verification of requisitions, preparation of vouchers, etc.

The commissary division, which supplies not only the constabulary, but other civil bureaus and employees in the provinces, has an appropriated working capital of ₱482,000. It sold during the year in Manila supplies to the value of ₱168,186.64, and in the provinces about ₱405,521.19, or a total of ₱573,707.83. It purchased during the year stores amounting to ₱494,151.02, for which it owed at the end of June ₱57,726.73, with assets on June 30 of ₱563,515.62. The sales in the provinces, amounting to ₱405,521.19, were made by supply officers, and show somewhat of an increase over sales made last year, with a loss of $4\frac{1}{2}$ per cent by deterioration. From this it is seen that the working capital is turned over not to exceed 1.25 times a year.

There have been made about 400 shipments, numbering about 35,000 packages, weighing 2,462,821 pounds, and valued at, approximately, ₱410,000.

The cost of the commissary division—that is, salaries and wages—is paid from the current appropriation for the constabulary. A surcharge of 10 per cent is added to the purchase price of all commissaries for the purpose of covering losses and transportation. The cost of transporting supplies to Bagulo last year was 20 per cent of the selling price. This does not include the cost of moving supplies by pack train, or of other constabulary transportation. If the cost of transportation in the city of Manila—railway charges, freight from Dagupan to base of pack train, and cost of operating pack train were taken into consideration, the cost of transportation from Manila to Bagulo would be more than 50 per cent of the value of the goods imported. On articles like hay, oats,

and rice, it is almost 100 per cent. Notwithstanding this fact, commissaries are sold at Bagulo with the 10 per cent surcharge, as they are in Manila. The same conditions prevail in Nueva Vizcaya and Lepanto-Bontoc—that is, it costs 21.3 per cent of the selling price to deliver commissaries into Lepanto-Bontoc and a similar amount to get them into Nueva Vizcaya. This, together with heavy losses by deterioration in a few provinces and the ordinary losses by deterioration in other provincial commissaries, consumed the greater part of the surcharge.

A supply officer may become overstocked with commissaries from unavoidable causes. After requisitioning for supplies to feed a certain number of enlisted men for a given time it sometimes occurs that, on account of disturbed conditions in some other part of the islands, troops are sent out of the province, leaving him overstocked. In this way large losses are occasioned.

Heretofore the great bulk of transportation has been donated by the bureau of coast guard and transportation. This has saved the commissary the amounts that would have been paid for transportation. The entire loss sustained by the division for the year is something less than ₱20,000.

The cost of the personnel, including the commissary officer, clerks, and labor employed, amounted this year to about ₱30,000.

Bearing in mind the amount of supplies received and sold in Manila, transferred to and sold in the provinces, that the commissary officer must keep in touch with supply officers to prevent as far as possible their overstocking, see that they deposit sales for commissaries with regularity, and dispose as promptly as possible of deteriorated and damaged stores, it is evident that the entire force of this division is continually employed.

The commissary officer is efficient and saving, and it is only through his energy that losses are kept at a minimum. There have been, of course, losses, due to inefficient supply officers, but this could not be avoided. Notwithstanding all losses, the profits of the commissary since its organization amount to ₱43,520.05. This, however, is not net, as its running expenses are borne from the current appropriation; but when it is considered that the insular government through it insures the feeding of its widely-scattered constabulary and of insular and provincial officials distributed throughout the archipelago, it is believed that the government should congratulate itself on being able to break so near even.

The system in the commissary division of keeping record of receipt of goods, sales, transfers, stock on hand in Manila and in the hands of provincial supply officers, amount of funds on hand and in the hands of supply officers, is a most satisfactory one. That the commissary division is well and economically administered there can be no doubt.

The transfer of this division to the bureau of the insular purchasing agent can not effect a saving for the government. The commissary at present does not pay its running expenses. In the future it will be required to pay for transportation on coast-guard cutters. If transferred to the bureau of the insular purchasing agent, the surcharge of 10 per cent will be further taxed to assist in maintaining that bureau, or an additional per cent will have to be added to the selling price. A clerical force will be needed in the office of the chief supply officer to perform the work now done by the commissary division in connection with the commissaries in the provinces. Another element that will have to be considered is the settlement of accounts and the disposition of damaged and deteriorated stores. Taking these things into consideration, for all practical purposes and to obtain the ends desired, it is believed that the commissary is now run more economically than it can be should the transfer be consummated.

The ordnance division received during this fiscal year ordnance and ordnance stores amounting to ₱109,666.29. Of this amount there has been transferred to supply officers, issued or expended in repair and manufacture ₱51,885.54. The balance, ₱57,780.75, was on hand June 30.

It is the duty of this division to keep in repair and working condition all arms and equipments in the constabulary and a great part, if not all, of the arms in the hands of the municipalities. Several thousand arms belonging to the constabulary have been issued to municipalities on memorandum receipts. These arms get out of repair and need overhauling. In the early days of this organization all repairs were made by the military ordnance depot until such a time as a shop could be fitted up for this work. During the past year many improvements were made in the shop; machinery heretofore needed was received. The shop at present is adequate for the work devolving upon it.

Due to climatic influence, it is difficult to keep arms in good condition. There

were repaired and reblued in this division 2,452 arms, including carbines, revolvers, shotguns, etc. There were 4,356 cleaned, repaired, and oiled. In addition to cleaning, repairing, and rebluing of arms, horse equipments, bridles, and pack saddles are manufactured and repaired in this division. All arms, ammunition, etc., required in the provinces for the use of the constabulary and municipal police are shipped by this division, through the quartermaster, to the various supply officers for distribution. All arms captured or surrendered to the constabulary or municipal police are shipped by the supply officer of the province to the ordnance officer in Manila, who repairs them if practicable; if not, they are disposed of by an inspector. On the whole, the division is well equipped, well managed, and economically administered. The total cost, not including material expended in the repair and manufacture of arms, this year amounted to ₱16,400.

The ordnance officer, in addition to the duties outlined above, has charge of what is known as the San Juan Powder Magazine. All explosives of any nature whatsoever coming into the Philippine Islands not belonging to the military are placed in his charge. It requires considerable time and attention to see that they are properly cared for.

The medical division, organized for the purpose of establishing hospitals and caring for sick and wounded in isolated and outlying districts, now operates 8 hospitals and 3 wards, containing 240 beds. During the past year it treated 1,257 patients in hospitals and 861 in quarters, a total of 2,152, of whom 31 were not members of the constabulary. This does not include those treated in Samar hospitals. In the first, second, third, and fourth districts there are hospital corps men who are capable of giving first aid to the sick and wounded and treating minor complaints. In the fifth district there are no hospital corps men other than those in the hospital at Zamboanga and the ward at Davao.

In each district except the fifth are a surgeon, several medical inspectors and a number of hospital corps men. The superintendent of the medical division is also surgeon of the first district. There is no surgeon for the fifth district, although one has been requested in the last two estimates.

Through the superintendent and district surgeons supplies are distributed and accounted for, bills for medical and surgical services checked, hospitals supervised, the examination of recruits and discharge of men arranged, and bills for treatment of others than members of the constabulary collected.

For each patient admitted to a constabulary hospital the medical officer is authorized to draw 40 centavos per day for subsistence. The bill for treatment of a person not a member of the constabulary is sent to the superintendent of the medical division, who makes collection from the bureau or office where the patient is employed. Persons receiving not more than \$60, United States currency, per month are charged at the rate of 40 cents, United States currency, per day for subsistence and medical treatment; those receiving more than \$60, United States currency, per month are charged \$1, United States currency, per day.

While this division is small and not adequate to meet the demands of the constabulary, it provides medical treatment for all government employees in outlying districts where they are unable to avail themselves of army hospitals in the provinces or the civil hospital in Manila. The idea is that the medical division offer first succor to the sick and wounded in those districts where there are no hospitals and hospital treatment in remote localities.

It is also the duty of this division to furnish details of enlisted men to accompany expeditions and detachments in the field.

In some provinces the medical officer is president of the provincial board of health.

With but two exceptions, all medical inspectors now in the service are graduates of medical schools. It is the aim of the superintendent to appoint in the future only graduates, but this will necessitate an increase in pay in the rank of lieutenant.

During the past year the cost of the medical division, including pay of officers and enlisted men and money expended for the purchase of medicines and medical supplies, was about ₱70,000. The division is well and economically administered, and with its limited facilities has done excellent work.

The telegraph division constructs, maintains, and repairs telegraph and telephone lines for the civil government. This work is done through the superintendent in Manila and his district telegraph officers, under whose direction are linemen and operators. It now operates 2,267.75 miles of telegraph lines, 2,348.75 miles of telephone lines, and 169.21 miles of cable, a total of 4,785.71, and 87 telegraph offices and 463 telephone offices. For the year a gain was

made of 230.70 miles of telegraph lines, 135.70 miles of telephone lines, and 6.21 miles of cable. One hundred and twenty-four miles of telegraph lines were transferred from the United States Signal Corps to the telegraph division.

During the year there were handled from 40,645 to 55,093 telegrams a month, making a total of 571,935. The total receipts for all telegraph lines operated by the Signal Corps and telegraph division were ₱120,077.50, of which amount the telegraph division received ₱36,365.80, having handled about 32 per cent of the entire business. This is somewhat of an increase over the business done last year by the telegraph division.

On June 30, 1904, supplies amounting to ₱30,000 were on hand, ₱80,594 worth of stores were received during the year, and for the same period transfers, issues, and expenditures amounted to ₱56,204.88, leaving on hand June 30, 1905, supplies valued at ₱54,389.12.

The telegraph operators number 46 Americans and 84 natives, the latter being enlisted after having been trained in the Manila Trade School. There were formerly schools in telegraphy at Iloilo and Vigan, but owing to the lack of American operators for imparting instruction these schools were discontinued and native operators can be secured only from the one school.

There are 40 American and 166 native linemen. Of the latter, 151 are enlisted men detailed with the telegraph division for this work.

All supplies for the telegraph and telephone service are purchased by the chief supply officer and transferred by the superintendent to the various telegraph officers through the quartermaster. In some parts of the islands there are no district telegraph officers, and in such cases the supply officer receives and distributes telegraph and telephone property.

The pay of the telegraph division amounts to ₱234,521.49. There has been spent for supplies and for transportation of same and for construction and repair of lines ₱89,932.66, a total of ₱324,454.15. This does not include amounts spent for iron poles or iron cross arms, or those things chargeable to other subheads of appropriation, such as clothing, equipage, stationery, etc., medical treatment.

The scale of wages in the telegraph division is entirely too low. Of the 46 American operators, only 5 draw \$1,000 per annum. The others get from \$65 to \$75 per month each. The majority of these men have received in the past, and can earn in the future, \$65 to \$75 per month in the United States. A like sum in the Philippine Islands offers no inducement to them to remain, and it is very difficult at present rates of pay to keep operators for any length of time, except those who come from the United States under contract. There are now employed 14 operators who were appointed from the United States under the provisions of Acts Nos. 643 and 1040. During this year 12 of these will have completed their contracts, and in view of the small salaries paid to operators contemplate returning to the United States. Not only are the operators underpaid, but the officers as well. A slight increase in the pay of operators has been asked in the estimate for the pending appropriation, but on account of the contemplated change of the telegraph division to the bureau of posts no increase is asked for the officers.

During the past year a repair shop has been fitted up and an electric motor installed, and many delicate instruments heretofore thrown away, or which were replaced by new ones, are now repaired in this division.

Taking into consideration the amount and character of the work of the telegraph division and the efficient manner in which it is performed, this division is economically and satisfactorily administered.

During the year the quartermaster division has undergone several changes, which improved its service and better regulated the work. It is one of the duties of this office to submit to the chief supply officer estimates of supplies needed by the enlisted force to be purchased for the succeeding fiscal year. On these estimates the chief supply officer advertises for bids, and contracts are let accordingly. The quartermaster division receives, transfers, or issues clothing, shoes, equipage, forage, boats, stationery, blank forms, animals, vehicles, and such other supplies as are required in the constabulary service not pertaining particularly to any other one division.

The constabulary has never been so well clothed as during the past year. The vexatious problem of shoes and leggings that so long worried it has been solved. Twenty thousand pairs of shoes of the late United States Army model and 15,000 pairs of leggings, the same as used in the United States Army, were purchased in the United States by the purchasing agent under the Bureau of Insular Affairs, and cost approximately over ₱100,000. It was intended to have half of the shoes delivered this fiscal year and half during the next fiscal year.

but through a misunderstanding of some nature they were all forwarded this fiscal year. It will be necessary to place an order for about 5,000 pairs of shoes, to be delivered about March, 1906.

The uniforms have given more general satisfaction than heretofore, and have cost considerably less. Stockport khaki, Leeman & Gaddy's dye, is used, costing 51 centavos per yard; but for next year contract has been let for the same kind, grade, and quality of goods at 48 centavos per yard. Each uniform contains about 6 yards of cloth and costs ₱1.28 for the making of it. It formerly cost about twice this amount. A few uniforms have been made by Bilibid Prison, but they have been very unsatisfactory, both in the nature of the work and the time required to deliver them.

During the year there was paid for clothing and equipage ₱408,000. For the same period there was spent ₱100,000 for forage, veterinary attendance, medicines, etc. For the purchase and hire of draft and riding animals, harness, carts, boats, etc., there was spent ₱97,388. The constabulary is much better equipped in its land transportation than it has ever been since its organization. A thoroughly equipped pack train, under the immediate direction of an officer stationed in Dagupan, during the early part of the year was operated between Camp Four via Klas Trail and Bagulo. This pack train carried supplies not only for this bureau, but for all other bureaus of the civil government, except for the Benguet road.

The spring-wagon service previously mentioned was organized and established between Dagupan and Baguio after the opening of the Benguet road. The extra mules, harness, and equipment required for this spring-wagon service cost in the neighborhood of ₱20,000. It earned during the short period it was in operation ₱4,398, and cost approximately ₱2,400 a month. This includes the hire of the necessary personnel, forage, rent, etc.

Both the spring-wagon service and pack train are maintained, not for the constabulary alone, but in order to afford transportation facilities for all government bureaus. The total cost, not including losses by deterioration of property or death of mules, is approximately ₱55,000 a year.

Constabulary transportation consists of 780 mules, horses, carabaos, and burros; 172 wagons, carts, carromatas, carretelas, etc., and 65 launches, lighters, boats, and bancas.

This division handles freight for all of the supply divisions and makes all shipments from Manila for the constabulary. During the year it made 2,563 shipments, with a weight of 4,800,215 pounds, not including live stock, vehicles, funds, etc., which were not shipped by weight, at a cost of ₱32,389.68. This cost, however, is only for supplies transported by the Manila and Dagupan Railway and commercial boats. Almost two-thirds of the freight was carried on coast-guard cutters. The freight carried by commercial boats was generally such supplies as iron telegraph poles, oil, etc., which the coast-guard cutters can not handle.

The improvement in this division during the past year has been felt throughout the constabulary, and it is needless to say that it has never been so well or regularly supplied since the organization of this division. Complaints have sometimes been received of slowness in getting supplies to outlying stations and in the filling of requisitions, thereby impairing the service to a more or less degree. This was not due to lack of efficiency on the part of the quartermaster division, but to several other causes. Sometimes supplies requisitioned for were not in stock and no funds were on hand with which to purchase them. Sometimes goods had to be purchased by contract, but were not delivered at the time they were requisitioned for. Sometimes the officer requisitioning failed to state his reason for asking for articles that were not considered in the regular equipment, requisitions for which must first have the approval of the district chief. If the explanation given is satisfactory to the quartermaster, he submits the requisition to the chief supply officer for his approval.

This division furnishes transportation to officers, enlisted men, and employees from Manila to their destination. Formerly the constabulary owned and operated its own transportation here in Manila. On April 1 of this year, by direction of the governor-general, transportation for all bureaus was consolidated and turned over to the city of Manila, which greatly reduced the cost of transportation to this bureau. It is not as efficient as the transportation prior to April 1, because it is owned and controlled by one bureau and works for another. Particularly is this felt in a service of this kind, where the prompt distribution of supplies is most important.

On June 30, 1904, there were on hand in this division ₱227,867.17 worth of supplies, and stores valued at ₱771,699.32 were received during the year. Of

these there were sold, transferred, and issued stores amounting in value to ₱730,965.33, leaving a balance on hand on June 30, 1905, worth ₱268,601.16.

The cost of this division, including clerical force, laborers, launch crews, pack train, and spring-wagon personnel, amounted to ₱73,743.33. In receiving, transferring, and shipping the vast amount of goods handled there has been virtually no loss sustained by the government. During the year the work of the quartermaster division has been greatly systematized, resulting in increased efficiency to the bureau.

In paying, feeding, clothing, arming, equipping, transporting, quartering, doctoring, and providing for the other wants of the constabulary, furnishing telegraph and telephone service to the insular government, and transportation between Dagupan and Bagulo there has been handled and distributed ₱4,569,279.78 in funds and property and supplies valued at over ₱2,000,000. The cost of this, including that of this office, the supply officers, and the supply divisions, was approximately ₱500,000, or about 14 per cent of the entire cost of the constabulary. Considering only officers and enlisted men and eliminating the telegraph division the per capita cost of the constabulary for this fiscal year has been about ₱542. It is somewhat greater than for the last fiscal year, which was due to a variety of causes, principally the Pulajan outbreak in Samar, disturbed conditions in other parts of the Visayas, and the large ladrone movement in Cavite, Batangas, and Laguna.

The troops in these disaffected districts were promptly and well supplied, and it is believed that during the year every demand upon the supply divisions, within the means of the limited appropriation for the constabulary, has been successfully met. This is due in large part to the organization of the supply divisions and to the efficient and hearty cooperation of the chiefs of the several supply divisions, Captains Fisk, Shultz, Baker, Robertson, Bortels, and Wheat, all of whom I commend to your consideration.

Very respectfully,

H. B. HARPOLD,
Assistant Chief Supply Officer.

The ADJUTANT-GENERAL,
Philippines Constabulary.

EXHIBIT 8.

EXTRACT FROM REPORT OF SUPERINTENDENT INFORMATION DIVISION,
PHILIPPINES CONSTABULARY.

HEADQUARTERS PHILIPPINES CONSTABULARY,

INFORMATION DIVISION,

OFFICE OF THE SUPERINTENDENT,

Manila, P. I., August 15, 1905.

SIR: I have the honor to submit the following report of operations of this division for the fiscal year ending June 30, 1905:

	Total.		Total
Cases investigated	1,589	Property recovered—Continued.	
Arrests	1,440	Phonographs	1
Property recovered:		Bicycles	6
Horses	27	Jewelry (value)	₱1,500
Carabao	97	Neck chains	2
Carromatas	1	Arms captured:	
Cows	4	Rifles	91
Bancas	1	Revolvers	97
Personal effects (value)	₱100	Shotguns	20
Tea sets	1	Ammunition	2,195
Currency	₱89	Bolos	29
Watches	3	Sabers	4
Haversacks	1	Warrants received	467
Diamonds	7	Warrants served	351
Rings	2		

Very respectfully,

AMOS D. HASKELL,
Major and Superintendent, Philippines Constabulary.

To the ADJUTANT-GENERAL,
Philippines Constabulary.

APPENDIX B.

ANNUAL REPORT OF THE BUREAU OF ENGINEERING.

MANILA, P. I., October 19, 1905.

SIR: I have the honor to submit herewith the annual report of the operations of the bureau for the fiscal year ending June 30, 1905.

ROAD SURVEYS AND CONSTRUCTIONS.

While the most important work of the bureau has been in connection with the problems of transportation, and more especially road construction, comparatively little new work has been undertaken, principally on account of the financial depression due to the destruction of draft animals by rinderpest and surra, the destruction of crops by locusts, the existence of cholera, and ladrone activities, and the effects of changing standards of currency, all of which factors can not simultaneously reoccur. The work previously provided for from the Congressional relief fund, which is now practically exhausted, has been completed or is under prosecution. Also, the location of highways meriting insular assistance will be considerably modified in many provinces by the location of the proposed railroads which are now under advertisement.

The construction of new roads has been based on the immediate necessities of serving regions wherein agriculture was already active, rather than the opening up of other fertile regions or the serving of localities of possible strategical importance.

Likewise the provinces have shown considerable decrease in expenditures for public improvements, due mainly to the reasons above cited. The aggregate expenditures for public works in the provinces organized under the provincial act, as hereinafter tabulated, was ₱1,063,887.75, and for the previous fiscal year it was ₱1,237,852.41.

However, there has been a noticeable increase in similar expenditures by the various municipalities, and it is evident that under normal healthy conditions the necessities of insular and provincial expenditures for public improvements of a local nature will be materially decreased on account of an active public interest in the municipalities. Legislative action encouraging such municipal spirit and facilitating the prosecution of public improvements by furnishing as fully as possible necessary technical and scientific assistance merits the fullest consideration.

A statement showing the essential details of the various road surveys accomplished during the fiscal year follows:

ROAD SURVEYS.

Pampanga-Subig Bay roads.—Under date of March 29, 1904, the survey of roads from Angeles, Pampanga, to Dinalupijan, Bataán, via Pórac, and from San Fernando, Pampanga, to Dinalupijan, Bataán, via Bacolor, and from Dinalupijan to Subig. Bataán via Olongapó, was authorized by the governor-general.

The survey was completed by Mr. B. G. Fogg, assistant engineer, October 17, 1904. The total number of miles surveyed was 68, and the cost of the survey was ₱3,615.35.

Mr. Fogg's report shows that the existing conditions are as follows:

(1) Fair roads exist for about 16.5 miles of the distance between San Fernando and Dinalupijan (21.5 miles). Twenty-seven culverts with an aggregate length of 132 linear feet, and 18 bridges, with an aggregate length of 925 linear feet, are needed.

(2) A fair road exists for about 15 miles of the 22.5 between Angeles and Dinalupijan, with a fair trail for about 5.5 miles, and a good trail for 2 miles. Twenty-one culverts, aggregating 106 linear feet, are needed, and 13 bridges, aggregating 944 linear feet.

(3) The trail from Dinalupijan to Subig, 24 miles in length, is impracticable for vehicles. One hundred culverts, aggregating 310 linear feet, and 27 bridges, aggregating 1,862 linear feet, would be needed on this section.

The following reasons for construction were submitted: The agricultural products of the district traversed are principally rice and sugar cane, with some corn. Between Lubao and Dinalupijan the land immediately adjacent to the road is said to be the richest in Pampanga, but is not fully cultivated owing to lack of transportation facilities. It is estimated that 2,000 acres of rich land would be opened in this portion if the road were constructed. There are also good rice lands between Dinalupijan and the foot of the mountains, and between Olongap6 and Subig; also the open ports on the coast of Zambales are inaccessible for the interisland boats during the prevalence of the southwest monsoons.

The construction of these roads would open up large and valuable lumber regions over the mountains, facilitate the movements of officials and the constabulary, or troops, and would furnish a continuous road from Subig across Zambales, Bataán, and Pampanga, connecting these regions with the railroad. From Subig the road would connect with the coastal road leading north through Zambales to Iba, the western terminus of the Capas-O'Donnell-Iba road, and if deemed expedient it would permit the consolidation of Bataán and the southern part of Zambales with Pampanga—a rich and fertile, but small, province.

With Olongap6 as a naval base, the road connecting with Subig would make that town the most important port on the bay. The trip between these two points is now made by a banca, and requires one hour; a commercial steamer from Manila now makes the connection twice a week.

The estimated cost of the proposed construction, based on gravel surfacing 12 feet wide through the densely populated portions and 8 feet wide over the mountain section, with roadbeds 20 and 16 feet wide, respectively, was, for the alternate routes:

	Length.	Estimated cost.	
	Miles.		
Angeles to Dinalupijan	22.5	₱135,600	₱135,600
San Fernando to Dinalupijan	21.5	.....	₱188,600
Dinalupijan to Olongap6	17.5	150,200	150,200
Olongap6 to Subig	6.5	72,600	72,600
Total		358,400	361,400

No action was taken on this project during the fiscal year.

Bohol-Loboc-Ubay road.—A survey of this road was authorized by the governor-general, under date of March 10, 1904, and a field party, under charge of Mr. R. A. Blair, assistant engineer, left Manila July 9 and returned September 3, 1904. The total distance surveyed was 50.5 miles, and the cost of the survey was ₱2,463.03.

Mr. Blair reports that an old Spanish highway constructed about fifty years ago extends from Loboc to Sierra Bullones, a distance of 30 miles. To Carmen, a distance of 21 miles, this old road has a fair roadbed, although it is impassable for vehicles on account of the need of grading, surfacing, and bridges. From this point, however, the old road is nothing more than a deserted trail.

The interior of the island was formerly rich in agricultural products and foremost in cattle raising, and a road affording an outlet for such products would materially assist in renewing prosperous conditions. A road from Carmen to Loboc would afford an outlet for agricultural products throughout the region between Bilal (Vilar) and Carmen to the market at Loboc, which, by way of the port of Loay, has direct communication with Cebu. It would also stimulate the hemp and sinamay industry and facilitate the movements of provincial officers and the constabulary, and, more especially, the expenditure of money in road construction would materially relieve the present financial stringency.

Estimates based on the construction of a substantial highway from Loboc to Sierra Bullones, and of a trail from thence to Ubay, including bridges and culverts, aggregated ₱327,400.

The report was forwarded to the Commission recommending that the construction of that portion of the road of greatest immediate importance to the inhabitants of Bohol, from Loboc to Bilar (a distance of 10 miles), be provided for by appropriations from both insular and provincial funds. The estimated cost for this section is ₱50,000.

No action thereon was taken during the fiscal year.

Marinduque (Tayabas Province)—Balanacan-Boac road (Balanacan Harbor).—A survey for the purpose of preparing plans and estimates showing the cost of the development of this harbor, both for commercial purposes and as a harbor of refuge, and connecting it by means of a highway with Boac, was authorized by the civil governor November 30, 1903. A survey party under Mr. Max Dobbins, assistant engineer, left Manila July 11, 1904, and returned December 15, the survey having cost ₱6,856.39.

It is estimated that only 30 per cent of the land in this locality formerly under cultivation is to-day producing crops. The harbor of Balanacan is one of the finest natural harbors of its size in the archipelago, being completely landlocked. The exposed port of Laylay, a barrio of Boac, measured by the volume of cargoes received and discharged, is the most important in the island. The improvement of the exposed port of Laylay would require a prohibitive sum.

Although that portion of Marinduque, directly benefited by the proposed construction of this road, is only about one-third of the total area of the island, yet it contains about 60 per cent of the total population, produces 78 per cent of the hemp exported, and has a land valuation of 69 per cent of the entire island.

The primary purpose of the proposed improvements is to reduce the cost of marketing products. It will also in time tend to the material development of the most important part of the island. The road and harbor projects are interdependent, and both should be constructed simultaneously.

A survey was made of two routes, one extending inland, economical in first cost, and giving a distance of 13 miles from the proposed wharf site to Boac; the shore route reduces the distance to 8 miles. The estimated costs for these highways were ₱168,666 and ₱257,720, respectively, and the estimated cost of the pier was ₱17,280, without allowance for contingencies in either case. This locality is favorable to the utilization of prison labor, and a modified estimate employing prison labor gives the following results:

Inland route, 13 miles in length.....	₱69,120
Shore route, 8 miles in length.....	84,000

The perpetual advantages of the shorter route lead to the recommendation that the shore route be constructed, provided prison labor is available, the necessary funds to be provided for from both insular and provincial sources.

Occidental Negros—Valle Hermosa—La Castellana road.—Survey of this road was authorized by resolution of the Philippine Commission dated November 10, 1903. The survey party, under the charge of Mr. R. Suter, assistant engineer, left Manila July 12, 1904. The total number of miles of road surveyed was 121, and the cost of the survey was ₱5,900. The roads surveyed extend from the western coast towns, San Enrique and Ginigaran, inland to the vicinity of La Carlota and La Castellana. The former is near the agricultural experimental station at La Granja, and the latter is one of the principal towns of central Negros. From this point the road crosses the divide and extends to Valle Hermosa, a town on the eastern coast near the provincial boundary between Oriental and Occidental Negros.

The region served by that part of the proposed road on the western side of the island is one of the most fertile and extensive sugar regions of the islands. It is in general under thorough cultivation; the roads are practically impassable during the rainy season, and transportation is facilitated by the limited use of local tramways.

It has been estimated that with proper facilities for marketing sugar, the resulting saving on account of its delivery when the market is high, would equal the cost of road construction and repair within a period of two years.

The road over the divide to Valle Hermosa is of no immediate commercial value, and would probably not be for some years. Its principal uses would be in suppressing larceny and as a means for official communication, both of which objects could be accomplished as readily by the construction of a rail. If, however, the two provinces are consolidated, and La Castellana should become the capital, this road would then become necessary. This region is well

suited to the development of electric roads, grades are not excessive, and water power in the neighborhood of Canlaon is ample.

Estimates of the cost of construction follow:

San Enrique to La Castellana via La Carlota and Hagulmit, 71 miles... ₱162, 700

This road as far as Hagulmit would consist of the extensive repair of existing roads and bridges, and practically new construction for the remainder of the distance.

Ginigaran to La Castellana via Aranda and Bongabin, 20.3 miles..... ₱179, 800

From Ginigaran to Aranda the work would consist of extensive repairs, and practically new construction for the remainder of the distance.

Isabela to Aranda, a branch road, 3 miles in length..... ₱26, 700

La Castellana to Valle Hermosa, mountain section, length 26.7 miles... ₱131, 850

Total estimated cost of all projects submitted..... ₱501, 050

The construction of a substantial road from San Enrique to La Granja should be given first consideration. The construction of the mountain section across the island to Valle Hermosa may be postponed until greater commercial importance exists and the question of the railroad location is more definitely settled.

Island of Panay—Iloilo-Cápiz and Iloilo-Buenavista roads.—Investigations for highways along the southern coast of Panay from Iloilo, Iloilo, to San José de Buenavista, Antique, and northerly across the central part of the island from Iloilo to Cápiz, Cápiz, were authorized under date of November 17 and December 2, 1903.

Preliminary investigations were made by Mr. J. C. Mulder, assistant engineer, during the months of December, 1903, and January, 1904. The total distance was estimated to be 66 and 82 miles, respectively, and the cost of the investigations were ₱531. The estimated cost of these projects was ₱942,900 and ₱826,600, respectively.

The immediate necessity for the construction of a substantial highway along the southern coast and across the divide to Buenavista was slight. Although the proposed road to Cápiz passes through the most fertile and richest portion of the provinces of Iloilo and Cápiz, immediate provisions for the prosecution of the work was delayed pending the results of a railroad survey authorized between these termini.

Interprovincial roads, Tárlac and Nueva Écija: San Juan de Guimba-Victoria; Cabanatuan-Cuyapo: Miscellaneous.—Surveys of these connected roads were authorized September 1, 1903, and November 7, 1903, and were made by Mr. W. G. Hunter, assistant engineer, during the months of January to May, 1904, inclusive. The total number of miles aggregated 60.1. The cost of the survey was ₱2,800.

These various roads comprise a system of interprovincial highways between the provinces of Tárlac and Nueva Écija. The total estimated cost for the complete system is ₱489,925. These roads are located in a fertile and densely populated region. The necessity for construction is primarily for the development of existing agricultural interests and a reduction in the expense of marketing products. No funds are available in the interested municipalities and provinces. It is believed that if that portion of the project of the largest immediate necessity is accomplished with insular funds, the results attained will enable the provinces to complete the remaining projects from the increased revenues derived. Hence the following division was submitted for consideration.

Projects the construction of which was recommended:

	Length.	Amount.
	Miles.	
Tárlac-Victoria-San Juan de Guimba.....	18.2	₱138, 020
Cuyapo-Nampiculan.....	4.8	22, 500
Moncada-Nampiculan.....	8.6	41, 500
Allaga-Cabanatuan.....	8.5	60, 000
Total.....		262, 020

Projects the immediate construction of which was not recommended :

	Length.	Amount.
	<i>Miles.</i>	
Moncada-San Ramón	2.9	P24,980
Licab-Calibonga	4.8	34,250
Allaga-Licab	6.4	64,400
Cuyapo-San Juan de Guimba	11.4	100,285
Total		227,905

These estimated costs do not include allowances for contingent expenses.

Favorable action on these projects was deferred on account of lack of available funds.

Interprovincial road, Tayabas and Laguna; Luisiana-Magdalena; Majayjay-Lucbán.—This survey was authorized by the civil governor January 23, 1903, and was made by Mr. William Meadowcroft, assistant engineer, and party during the months of July, August, September, and October, 1904. The cost of survey was P2,790.84.

The object of the survey was to find a location for a road to serve as an outlet for traffic from Lucbán and its vicinity, Tayabas Province, to Santa Cruz or Pagsanjan, ports on Laguna de Bay. At present there are two trails through which this traffic may pass, viz:

(1) The old Spanish road from Lucbán, by way of Majayjay and Magdalena, to Santa Cruz.

(2) Lucbán, by way of Luisiana, Cavinti, and Pagsanjan, to Santa Cruz.

About 14 miles of the first trail has long grades from 20 to 30 per cent, and is impassable except for pack animals.

That portion of this route located between Magdalena and the Santa Cruz-Pagsanjan road has been provided for and is described under "Road construction."

The second route follows an old road for about 6 miles to Luisiana. It has no steep grades and crosses but few small streams. From Luisiana to Pagsanjan, by way of Cavinti, a distance of about 9.5 miles, the trail has many steep grades over ledge formation. Considerable traffic by means of pack trains from Lucbán and vicinity passes over this trail.

The most feasible route proposed is from Lucbán to the Santa Cruz-Pagsanjan road by way of Luisiana and Magdalena. The required work consists of the extended repair of the Luisiana section, a distance of about 8 miles, and the location and construction of a new road from Luisiana to Magdalena, also a distance of 8 miles, connecting at Magdalena with the road now under construction.

The total estimated cost of repairs and construction aggregate P144,465.

The land traversed is well cultivated. The principal products are coconuts and rice. In Lucbán large quantities of hats and mats are manufactured and shipped to Manila. The construction of this road should be provided for.

Sámar: Wright-Taft road.—Authority to detail an engineer from this bureau to assist the supervisor in making the necessary surveys for a road connecting the east and west coasts of Sámar was granted by the secretary of commerce and police September 14, 1904. Mr. J. S. Janeway, assistant engineer, was detailed for this work, leaving Manila November 1, 1904. The work was delayed owing to the activities of the ladrones through this region and the inability to secure the necessary guards.

Surveys were made toward Taft, as far as Balagon, by way of Loquilocan, a distance of about 13 miles. From Balagon a reconnaissance survey was made to Taft, and the final location is now being made by an engineer detailed from this bureau.

The new road would open up valuable agricultural land and would facilitate the suppression of future ladronism. It would connect the eastern coast of the island, dangerous to shipping, and the fertile interior, with a safe port at Wright.

Mr. Janeway's estimate of the cost of construction follows:

	Length. Amount.	
	Miles.	
16-foot road from Wright to Loquilocan	7	P22,440
8-foot surfaced roadway from Loquilocan to Balagon	16	67,870
6-foot trail from Balagon to Taft	6	89,870

The construction of the first section of this road was provided for by the provisions of Act No. 1307, and is now in progress.

Cebú—Cebú-Toledo road.—By resolution of the Philippine Commission, dated November 3, 1904, the consulting engineer was directed to make a survey of the road between the municipalities of Toledo and Cebú. Act No. 1000 had previously appropriated ₱178,000 for the construction of a road across the island of Cebú between Sogod and Putad.

The provincial governor presented a request for the abandoning of the latter project, and urged that its appropriation be made available for the Cebú-Toledo project through special legislation, on account of the larger utility of the latter road to the province. Surveys of the new project were authorized, and were completed in January, 1905. The report thereon was delayed on account of required surveys of the "burnt area," harbor improvements, etc. In the meanwhile the new project was authorized by Act No. 1329, and construction work commenced in order to relieve a condition of distress prevailing practically throughout the island.

The following tabulation shows the principal items relative to road surveys during the fiscal year:

Tabulation of road surveys.

Termini.	Authorization of survey.	Date of survey.	Cost of survey.	Length.	Estimated cost.	Remarks.
Pampanga and Bataan:				<i>Miles.</i>		
Angeles-Dinalupigan.....	Mar. 29, 1904	July 10, 1904	₱3,615.35	22.5	₱135,600	Action pending.
San Fernando-Dinalupigan.....	.....	.....	.....	21.5	138,600	.....
Dinalupigan-Subig.....	.....	.....	.....	24.0	222,800	Construction from Loboc to Bilar, 10 miles, ₱50,000. Recommended.
Bohol, Loboc-Ubay.....	Mar. 10, 1904	July 8, 1904	2,463.08	50.5	327,400	{ Cost by prison labor estimated at ₱69,120 and ₱84,000, respectively. Construction by prison labor recommended.
Marinduque, Balanacan-Bocac	Nov. 30, 1903	July 12, 1904	4,536.00	{ 13.0 8.0	{ 168,686 257,720	{ San Enrique to La Granja merits first consideration.
Occidental Negros:						
Valle Hermosa-La Castellana.....	Nov. 10, 1903	July 9, 1904	5,900.00	26.7	131,850	.....
San Enrique-La Castellana.....	.....	.....	.....	71.0	162,700	.....
Ginigaran-La Castellana.....	.....	.....	.....	20.3	179,800	.....
Isabela-Aranda.....	.....	.....	.....	3.0	26,700	.....
Panay:						
Iloilo-Capiz.....	Dec. 2, 1903	Dec. —, 1903	531.00	82.0	826,600	Action postponed pending results of railroad surveys.
Iloilo-San José de Buenavista.....	Nov. 17, 1903	Jan. —, 1904	.....	66.0	942,900	.....
Tarlac:						
Tarlac-San Juan de Guimba.....	Sept. 1, 1903	Jan. 5, 1904	2,775.00	18.2	138,020	.....
Cuyapo-Nampicuan.....	.....	.....	.....	4.3	22,500	.....
Moncada-Nampicuan.....	Nov. 7, 1903	.....	.....	3.6	41,500	Recommended.
Allaga-Cabanatuan.....	.....	.....	.....	8.5	60,000	.....
Moncada-San Ramón.....	.....	.....	.....	2.9	24,900	.....
Licab-Calibonga.....	.....	.....	.....	4.8	38,250	Not recommended.
Allaga-Licab.....	.....	.....	.....	6.4	64,400	.....
Cuyapo-San Juan de Guimba.....	.....	.....	.....	11.4	100,265	.....
Laguna:						
Magdalena-Luisiana.....	Jan. 23, 1903	July 10, 1904	2,799.84	8.0	116,525	Action pending.
Malajay-Luchán.....	.....	.....	.....	9.0	129,174	.....
Cebd, Cebd-Toledo	Nov. 8, 1904	{ Dec. —, 1904 { Feb. —, 1905	1,969.77	28.0	165,500	{ Construction recommended and commenced June 1, 1905, by transfer of funds from Sogod-Putad road, Act No. 1329.
Samar:						
Wright-Loquillocan.....	Sept. 14, 1904	Nov. —, 1904	1,306.33	7.0	22,440	Construction recommended and commenced during fiscal year under Acts Nos. 1337 and 1357.
Loquillocan-Balagon.....	.....	June —, 1905	.....	16.0	67,870	.....
Balagon-Taft.....	.....	.....	.....	6.0	89,870	.....
			25,896.32	442.6	4,602,640	

ROAD CONSTRUCTION.

Vigan-Bangued road.—Construction was commenced December 7, 1903, in accordance with the provisions of Act No. 920. It was completed and the final report made by Mr. E. S. Wheeler, superintendent, December 23, 1904, and the maintenance of the completed road was turned over to the province in accordance with the provisions of Act No. 920. A general description of the project is given in the reports of the Commission on page 214, part 3, 1903, and on page 193, part 3, 1904.

The sum of ₱80,000, appropriated by Act No. 920, having been expended during the fiscal year 1904, an additional appropriation was made by Act No. 1192 July 15, 1904, for the completion of the necessary bridges between San Quintin and Bangued.

The use of rafts on the Abra River for the transportation of products and supplies remains practically unchanged, principally on account of the economy of water transportation down the river and the lack of draft animals. The principal use of the new highway has been for official trips, light vehicles, and pack trains. The time for a trip from Vigan to Bangued has been reduced from eight to eighteen hours by the river route to about four hours by horse over the highway.

In view of the limited available provincial funds, the proper maintenance of this new road will be a difficult problem, and in connection with other insular roads it will require special attention.

A tabulated statement below gives in detail the class of work met with, and the cost.

Work accomplished.

Total length of bridges and culverts.....	feet.....	920
Number of feet of 24-inch round cement pipe for culverts.....	do.....	163
Total length of rock excavation.....	do.....	3,345
Total length of grading and earth excavation.....	do.....	24,468
Number of fords (3), total length.....	do.....	500
Minimum grade above low water in cañon.....	do.....	22
Total length surfaced road.....	miles.....	4
Maximum grade.....	per cent.....	6

Time of construction: December 7, 1903, to December 3, 1904.

Cost of construction.

Superintending.....	₱8,853.21
Camp expense.....	1,338.17
Medical expense.....	3,602.99
Subsistence:	
Natives.....	13,546.47
American.....	3,188.48
Transportation, special.....	2,786.68
Tools and equipment.....	4,664.12
Repairs.....	2,095.46
Materials purchased.....	10,708.56
Labor:	
American, not included in above.....	₱8,907.30
Native, not included in above.....	31,703.04
	40,610.34
Miscellaneous.....	1,989.75
Total expenditures.....	93,384.23

Money statement.

Appropriations:	
Act No. 920, October 3, 1903.....	₱80,000.00
Act No. 1192, July 13, 1904.....	14,700.00
	94,700.00
Expenditures:	
1904.....	₱79,877.22
1905.....	13,507.01
	93,384.23
Amount reverting to insular treasury.....	1,315.77

Padre Juan Villaverde trail.—A brief description of this trail appears on page 199, part 3, Annual Report of 1904.

It extends from San Nicolás, Pangasinán, to Bayombong, Nueva Viscaya, a distance of 62 miles, and it was constructed under the provisions of Acts Nos. 920 and 1083, appropriating ₱8,000 and ₱62,000, respectively. Since the opening of this trail it has proved of marked benefit to the province of Nueva Vizcaya, in which the greater part of the trail is constructed. The railroad at Bautista can now be reached from Bayombong, the capital, in three and one-third days of easy travelling; previously the trip from Bayombong required at least six days. No part of the province except the extreme northern Igorot country is more than five days' travel from the railroad.

The heavier portion of the construction was completed June 30, 1904.

During the dry season from 100 to 200 pack animals were using this trail daily. As a result, the industrial and commercial life of the province has received a decided impetus, and it is estimated that the business now being transacted in the province is double that done a year ago. The trail affords increased facility for interprovincial communication, and it is probable that towns located adjacent to it and separated only by short distances will not long continue to speak radically different dialects, as is now the case. It is also estimated that the population of the province has been increased by about 100 Ilocano families since the trail was opened.

The trail is in charge of a maintenance gang, the expense of which has been paid from the original appropriation, as the province has no revenues for this work. Special provisions will be necessary for future maintenance. However, with an equitable road law in operation, which law is strongly desired by the province, the trail can be readily maintained without insular assistance.

Money statement.

Appropriations:		
Act No. 920, October 3, 1903.....		₱8,000. 00
Act No. 1083, March 10, 1904.....		62,000. 00
		<hr/> 70,000. 00
Expended:		
1904	₱49,134. 69	
1905	20,443. 35	
		<hr/> 69,578. 04
Balance available July 1, 1905		421. 96

Capas-O'Donnell-Iba road.—A brief description of this project appears in the Annual Report for 1904, part 3, page 193-194. The construction of this road has given employment to an average daily number of 515 men for a period of sixteen months and distributed over ₱200,000 in the provinces of Tárlac and Zambales, which were badly in need of money owing to the death of cattle from rinderpest.

Less than 1 per cent of the laborers knew how to use a shovel, and required to be trained, so that the road has served in a large measure the rôle of a manual-training school in familiarizing the natives with American tools and methods.

It has opened up valuable timber lands heretofore inaccessible. The tendency to cultivate new lands or renew cultivation of abandoned lands has been slight.

A daily mail service between Manila and Iba could be arranged, although the provincial board of Zambales states that the existing weekly service with Manila, via Subig, is satisfactory. The province of Zambales is financially unable to maintain its portion of this road, claiming that other roads of more importance require all available funds. At least two permanent bridges will have to be erected before the road can be turned over to the provinces.

The heavier construction work was completed within the fiscal year and the forces materially reduced. The heavy rains and steep slopes in the mountain regions have required expensive maintenance or repair gangs, and this work has received special attention during the past few months. It will be necessary to organize regular maintenance gangs to patrol the mountain section for a few years if this road is kept passable and its usefulness developed.

Construction and maintenance work are still in progress.

Money statement.

Appropriation, Act No. 1016, Nov. 30, 1903.....	₱360,000.00
Expenditures:	
1904	₱76,928.73
1905	197,138.07
	<hr/> 274,066.80
Balance available July 1, 1905.....	85,933.20

Bay-Tiaong road.—A brief description of this road appears in the Annual Report for 1904, part 3, page 196.

This road connects Bay, a port on Laguna de Bay, with San Pablo, 10 miles from the lake. The latter town has a population of nearly 27,000. The entire region is thickly inhabited and the adjacent land is almost exclusively utilized in the cultivation of coconuts, which are converted into copra and transported to Bay by pack trains, and thence by boat to the Manila markets. The heavier construction work was completed during the fiscal year. The work remaining to be done consists mainly of surfacing, which for economical reasons was postponed until the dry season. Twenty thousand pesos are being reserved for the repair of the San Pablo-Tiaong section, on which no work has yet been done.

It has been stated that 600 to 700 ponies and about 140 vehicles make daily trips from San Pablo to Bay and return, and that the increased loads and the decreased time required for this journey will result in an annual saving of about ₱100,000.

Maintenance gangs are being organized and branch roads to adjacent barrios are under consideration by the provincial authorities.

Money statement.

Appropriation, Act No. 1073, March 3, 1904.....	₱144,600.00
Expenditures:	
1904	₱12,495.27
1905	94,522.30
	<hr/> 107,017.66
Balance available July 1, 1905.....	37,582.34

Magdalena-Santa Cruz road.—A brief description of this road is found on page 200, part 3, of the Report of the Philippine Commission, 1904.

Construction was commenced the latter part of April, with Mr. D. A. Sherfey, provincial supervisor of Laguna, in charge. At the close of the fiscal year about 2.1 miles had been graded and 1.1 miles surfaced.

The Magdalena-Santa Cruz road will form a portion of a trunk system leading into the province of Tayabas. It now affords an outlet for the towns of Nagcarlan, Lilio, and Majayjay, all of which are large coconut producers, and at present are seriously in need of transportation facilities. Construction work is still in progress.

Money statement.

Appropriation, Act No. 1073, March 3, 1904.....	₱70,000.00
Expenditures, 1905	15,217.95
	<hr/> 54,782.05

Calamba-Los Baños-Bay road.—A brief description of this road appears in the annual report for 1904, pages 196, 197. It forms an important section of the Laguna coastal road. Its construction is being prosecuted under military supervision, by whom transportation and the heavier equipments are supplied. It has been necessary to request an additional appropriation for this project to the amount of ₱24,000. The military authorities having reduced the force on account of the limited available funds, work is practically suspended. A proposed act providing the necessary funds is now before the Commission for action.

Money statement.

Appropriation, Act No. 1074, March 3, 1904.....	₱34,000.00
Expenditures:	
1904.....	₱2,686.90
1905.....	26,054.24
	<hr/> 28,741.14
Balance available July 1, 1905.....	5,258.86

Pagbilao-Atimonan road.—A brief description of this road appears in the annual report for 1904, pages 194, 195.

Available funds for the completion of the project were exhausted early in the year and nearly all work suspended, and an additional appropriation of ₱60,000 requested, action on which is now pending. The grading had been practically completed, some surfacing through the lowlands is required, and practically all temporary bridges built mainly for construction purposes require replacing with permanent structures. The mountain section has been seriously injured by heavy rains and landslides and it is not now passable for vehicles.

However, since the construction of this road the trip between Pagbilao and Atimonan, during the dry season, has been reduced from a hard day's journey to one of five hours or less. While traffic is comparatively light over the road, it has been estimated that it has increased 500 per cent over the old trail traffic, the trail having been impassable for pack animals.

The satisfactory completion of this project will be of large benefit to the province, especially the eastern coast, and it is recommended that the request for additional appropriations be granted.

Money statement.

Appropriation:	
Act No. 1015, November 30, 1903.....	₱174,000.00
Resolution, October 31, 1904.....	20,000.00
	<hr/> 194,000.00
Expenditures:	
1904.....	₱99,224.20
1905.....	94,002.19
	<hr/> 193,226.39
Balance available July 1, 1905.....	773.61

Lucena-Sariaya road.—A brief description of this road appears in the annual report for 1904, page 195. It was completed during March, 1905. The construction of this road has reduced the distance from Lucena to Sariaya, Candelaria, and Tiaong by about 8 miles. The improved road is now in constant use while formerly it was used only as a trail, which was impassable during the rainy season.

Adjacent land has been placed under cultivation for almost the entire length of the road, and on account of the increased facilities the carabao carts are loaded with 15 piculs of rice instead of 3, the previous load.

A small maintenance gang of one capataz and two or three laborers is constantly employed during the dry season; during the rainy season larger gangs are required.

On account of the difficulties encountered in fording the Iyam River at high-water stages a bridge should be provided from provincial funds at an early date.

Money statement.

Appropriation, Act No. 1073, March 3, 1904.....	₱39,000.00
Expenditures:	
1904.....	₱8,420.085
1905.....	16,257.625
	<hr/> 24,677.71
Balance available July 1, 1905.....	14,322.29

Pasacao-Nueva Cáceres road.—A brief description of this road appears in the annual report for 1904, page 195. This road serves as a short route to Manila from Nueva Cáceres, the provincial capital, the trip requiring two to three days less time by Pasacao than by way of San Bernardino Straits. New land is being constantly cleared along the line, especially between Pamplona and Pasacao; abandoned farms are again under cultivation, a sugar mill has been constructed, and a number of new houses erected. It is estimated that 100 per cent more land is under cultivation now than in 1903. Very little land adjoining the road is now for sale, and the price has materially risen in the past year. Between Pamplona and San Fernando there has been no material increase in industry.

From May, 1903, to May, 1904, 43 vessels called at Pasacao, while from May, 1904, to May, 1905, 85 vessels called, an increase of 42 vessels.

The appropriation was practically expended during the fiscal year 1904.

Maintenance of the road during the past year has cost ₱402.97, the original durable construction making few repairs necessary. The road as it now stands is in good condition, although bridges between San Gabriel and San Fernando, an important section, need repairs.

Money statement.

Appropriation, Act No. 918, October 2, 1903.....	₱50,000.00
Sale of rice and supplies.....	11,662.90
	<hr/> 61,662.90
Expenditures:	
1904	₱49,333.12
1905	5,933.89
	<hr/> 55,267.01
Balance available July 1, 1905.....	6,395.89

Tobaco-Ligao and Jovellar-Guinobatan roads, Albay.—A brief description of these roads is found on page 202, part 3, of the annual report for 1904. Construction began on the Tobaco-Ligao section of these roads December 5, 1904.

Although the Tobaco-Ligao road had been completed for only about 8 miles of its total length of 18 miles, the beneficial results of construction are evident. The old trail was impassable for vehicles and difficult for pack animals. Hemp, the principal product, was formerly brought into Tobaco by cargadores; now the cargadores are met at the end of the completed portion of the road and the hemp transferred to vehicles. The road now carries much heavier traffic than had been anticipated, and the law against fixed-axle and narrow-tire carts has been enforced on this road.

Practically all land in the vicinity of the road is now under cultivation, and several barrios have been located thereon.

A permanent maintenance organization will be effected immediately upon completion of road construction. In this, as in all other cases of road maintenance, the passage of a road tax is expected to furnish a comparatively easy solution of this important problem of maintenance.

At the end of the fiscal year, 8½ miles had been cleared and 8½ miles had been graded, ditched, and surfaced where necessary; and an aggregate of 335 linear feet of bridges had been constructed.

The use of Billibid Prison labor on provincial road work was undertaken for the first time on this road. One hundred and six prisoners arrived in Albay from Manila January 7; 125, January 13; and a further shipment of 250 prisoners arrived March 5. The prisoners were guarded by four companies of Philippine Scouts, furnished for this purpose by the military authorities. Auxiliary work requires the employment of about 25 laborers.

The estimated cost of the work accomplished with free labor was ₱230,000, and with prisoners ₱90,000. The progress of the work to date indicates that the work will be accomplished within the appropriation of ₱90,000. The superintendent, Mr. Crossland, provincial supervisor of Albay, reports favorably relative to both the quality and quantity of work done. Healthy camp locations were available and special attention has been given to strict sanitary regulations and medical attendance. Of the total available working time 12 per cent was reported lost on account of sickness, and 25 deaths occurred from disease. Prisoners suffering from protracted sickness and incapacitated for work have been returned to Manila from time to time.

While the results show a considerable saving to the province, data are not now available for making an accurate comparative statement of cost of prison labor as compared with free labor, or for determining the moral effect of prison-labor gangs upon the community in which such gangs are operated.

On March 24, 42 prisoners (all long-term men except 2) made a successful break for liberty. These prisoners did not receive material assistance from the inhabitants of Albay. The constabulary assisted in their recapture, and in the course of a few days all but 2 had been accounted for, 13 having been fatally wounded. Thereafter the prisoners were worked in larger gangs, slightly reducing their efficiency.

Money statement.

Appropriation:

Act No. 1260, November 14, 1904.....	₱65,000.00
Provincial congressional relief fund.....	19,671.56
Provincial road fund.....	5,328.44

90,000.00

Expenditures, 1905..... 50,402.82

Balance available July 1, 1905..... 39,597.18

Bacon-Sorsogón-Gubat-Bulusán road.—A brief description of this road appears in the annual report for 1904, pages 198–199. It furnishes direct communication between the east and west coasts of the province, connecting four of the most important towns, and providing an outlet to shipping ports for a large area of hemp country. While the principal function of the road is to provide an outlet for products already available, yet considerable new land has been placed under cultivation. The roadbed needs additional surfacing, which is being placed as rapidly as provincial funds and available transportation will allow. This project is completed in so far as insular funds are concerned, and its continuous maintenance, as fully as present conditions will permit, has been provided for by the organization of permanent maintenance gangs.

The road construction has included the erection of two steel bridges of 35-foot span; two of 60-foot span, and one of two 100-foot spans. The bridges were imported from the United States and erected by the provincial supervisor, Mr. H. L. Stevens, to whom credit is due for the efficient and satisfactory manner in which this work was undertaken and completed. The total cost of the bridge material, for superstructures only, was ₱10,745.68, and the cost of erection was about ₱2,200.

Money statement.

Appropriation, Act No. 920, October 3, 1903..... ₱80,000.00

Expenditures:

1904.....	₱59,455.79
1905.....	20,544.21

80,000.00

Sogod-Putad road.—This project, which was discussed in the report of the Philippine Commission for 1904, part 3, pages 197–198, was abandoned in favor of the Cebú-Toledo road, by reason of requests from the provincial governor for the construction of the latter road, and the funds appropriated by Act No. 1000, section (1b), were transferred by Act No. 1329, April 18, 1905, to the latter project, a description of which follows:

Cebú-Toledo road.—The ₱178,000 which had been previously appropriated by Act No. 1000, section (1b), for the construction of the Sogod-Putad road, Cebú, were transferred by Act No. 1329 to meet the expenses of constructing a road from Cebú, the provincial capital, on the east coast, across the central mountain range of Cebú Province to Toledo, on the west coast.

Owing to the conditions of famine and distress existing in this island, construction was commenced prior to completion of the final survey. That portion of the road lying in the lowlands on both sides of the mountain range will be a substantial 16-foot roadway, with an 8-foot trail over the mountain section. It

is probable that no necessity of transporting products over the mountain section will ever arise, and that its use will be confined to pack animals only.

Construction was commenced at the Cebú end of the road on May 28, 1905, and at the Toledo end on June 26, with about 40 laborers at each end. This number was rapidly increased until at the end of June there were about 500 men at the Cebú end and 300 at the Toledo end. Laborers were being paid 25 cents per day; cabos, in charge of 20 men, 40 cents; and escribientes, in charge of 100 men, 60 cents. It was expected that by the end of July 3,000 men would be employed on the construction.

At the end of the fiscal year a storehouse, blacksmith shop, and corral had been erected, and about 1 mile of 16-foot road had been constructed.

The provincial supervisor, Mr. T. Warren Allen, is in charge of the work, assisted by a general foreman in charge of each end of the road.

Money statement.

Appropriation, Act No. 1000, November 20, 1903 (transferred by Act No. 1329, April 18, 1905)-----	₱178, 000. 00
Expenditures, 1905-----	17, 753. 84

Balance available July 1, 1905-----	160, 246. 16
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(NOTE.—This road was charged with part of the equipment used on and purchased for the Carcar-Barili road, Cebú.)

Wright-Taft road, Sámar.—The purpose of this road has been heretofore described under the subject of surveys.

Act No. 1307, enacted March 3, 1905, provided ₱32,000, or as much thereof as necessary, for the first section of this road, or from Wright to Loquillocan, a distance of 7 miles. Work was commenced March 18, 1905, 1 mile east of Wright on camp construction. On account of the scarcity of laborers in Sámar, due to the prevalence of ladronism and military activities, it was necessary to import laborers from Cebú, of whom 150 arrived March 23. The wages paid are from 70 cents to ₱1 for laborers, and from ₱1 to ₱1.50 for capataces, both without subsistence. A total of about 320 men, mainly inhabitants of Cebú, were employed on the work at the beginning of April. It is believed that many of the laborers so imported will permanently settle in the island and actively assist in restoring a condition of peace and prosperity to the fertile island of Sámar.

The difficult nature of the country, combined with the dense undergrowth and the high cogon grass, has necessitated considerable expense in securing economical location.

During the latter part of the fiscal year construction has been seriously handicapped by an epidemic of malarial fever, which at times reduced the force to about 15 per cent of its normal strength. Every American on the work has suffered, and the fever was not apparently limited to the road construction force, but was also prevalent among the adjacent inhabitants.

The 7 miles of road between Wright and Loquillocan were practically completed at the end of the fiscal year. Additional appropriation, to the amount of ₱55,000, for the construction of the second section—Loquillocan to Bulagon—was provided by Act No. 1357, enacted June 23, 1905, and this work is now in progress.

Money statement.

Appropriation:	
Act No. 1307, March 3, 1905-----	₱32, 000. 00
Act No. 1357, June 23, 1905-----	55, 000. 00
	87, 000. 00
Expenditures, 1905-----	20, 828. 23
Balance available July 1, 1905-----	66, 171. 77

The following tabulation shows in convenient form the financial condition of the above-described projects at the close of the fiscal year.

Termini of roads.	Province.	Act.		Appropriation.	Available July 1, 1905.
		Number and date.			
Vigan	Ilocos Sur	920	Oct. 3, 1903	P80,000.00	
Bangued	do	1192	July 13, 1904	14,700.00	a P1,315.77
Padre Juan trail:					
Bayombong	Nueva Vizcaya	920	Oct. 3, 1903	8,000.00	
San Nicolás	Pangasinán	1083	Mar. 10, 1904	62,000.00	421.96
Capas	Tarlac	1016	Nov. 30, 1903	360,000.00	85,933.20
O'Donnell	do				
Iba	Zambales				
Bay	Laguna	1073	Mar. 3, 1904	144,600.00	37,582.34
Tiaong	Tayabas				
Magdalena	Laguna	1078	Mar. 3, 1904	70,000.00	54,782.05
Santa Cruz	do				
Calamba	do	1074	Mar. 3, 1904	34,000.00	5,258.86
Los Baños	do				
Bay	do				
Pagbilao	Tayabas	1015	Nov. 30, 1903	174,000.00	
Atimonan	do	(b)	Oct. 31, 1904	20,000.00	773.61
Lucena	do	1073	Mar. 3, 1904	39,000.00	14,322.29
Sariaya	do				
Pasacao	Ambos Camarines	918	Oct. 2, 1903	50,000.00	
Nueva Cáceres	do	(c)	(c)	11,662.90	6,395.89
Tobacco	Albay	1260	Nov. 14, 1904	65,000.00	
Ligao	do	(d)	(d)	19,671.56	
Jovellar	do				
Guinobatan	do	(e)	(e)	5,328.44	39,597.18
Bacón	Sorsogón	920	Oct. 3, 1903	80,000.00	
Sorsogón	do				
Buldsan	do				
Cebu	Cebu	1329	Apr. 18, 1905	178,000.00	160,246.16
Toledo	do				
Wright	Samar	1307	Mar. 3, 1905	32,000.00	
Taft	do	1357	June 23, 1905	55,000.00	66,171.77

a Reverted to insular treasury.

b Resolution.

c Sale of rice and supplies.

d Provincial construction and repair fund.

e Provincial road fund.

Total amount expended during fiscal year 1905, P592,605.81.

BRIDGES.

Aparri bridge.—The provincial board of Cagayan, by resolution dated January 23, 1905, authorized the consulting engineer to prepare specifications, advertise, and enter into a contract in behalf of the province of Cagayan, for the delivery and erection of a steel bridge at Aparri, at a cost not to exceed P10,800, this amount having been appropriated December 16, 1904, by the municipality of Aparri and turned over to the province for this purpose.

The Atlantic, Gulf and Pacific Company was the lowest bidder, and a contract was signed with that company under date of March 29, 1905.

The work is to be finished January 1, 1906, and is now under prosecution.

Hagonoy bridge.—The municipal council of Hagonoy, August 22, 1903, appropriated the sum of Pfs. 12,000 for the construction of a swing bridge over the Hagonoy outlet of the Río Grande de la Pampanga. The provincial supervisor was requested to superintend the construction. Requisition was made on the insular purchasing agent for material, and work commenced during March, 1904. The abutments and center pier were completed in August, and about 80 per cent of the expenses for the superstructure incurred when work was discontinued on account of lack of funds. The province then requested that insular aid be given the municipality in order that the work should continue. Investigations having been authorized, Mr. Max Dobbins, assistant engineer, was detailed from this bureau to examine into the condition of the work accomplished and make an estimate of the funds needed to complete the project. The center pier which consisted of concrete masonry, 14 feet in diameter, 18 feet high, was found to be out of alignment and unstable. It rested on a pile foundation and the river having scoured around the piling had exposed it to action of the teredo.

The investigation cost P282.29. A few days later the center pier failed and now lies on the river bottom a total loss.

The municipality, through the provincial board, has spent a total of P10,040.05, and has incurred liabilities to the extent of P3,419.40. It has about P5,000 worth of material on hand.

In place of the proposed swing bridge, Mr. Dobbins recommends a light suspension bridge having a roadway 14 feet wide, span 240 feet, the estimated cost of which, including approaches, is ₱23,577.

The public spirit shown by this municipality is exceptional, and insular assistance in completing the project has been recommended. Action on this project is pending.

Cavite bridges.—The Commission, under date of February 28, 1905, passed a resolution appropriating the sum of ₱10,000 for the construction of necessary bridges on the Indang-Silang road, Cavite Province, and in a subsequent resolution stated that owing to operations being conducted against ladrones in Cavite Province, which made it necessary to expedite this work, advertising for bids was dispensed with.

Plans and specifications were prepared for 15 wooden stringer and truss bridges, aggregating a total length of 443 feet. Tenders were requested from various local firms, the lowest of which was made by the Atlantic, Gulf and Pacific Company. Accordingly, a contract was entered into with that company, under date of March 3, 1905, for the erection of these bridges at a total cost of ₱10,600. These bridges were completed and accepted the latter part of April, 1905.

The Silang-Indang road is the main highway connecting the eastern and western portions of the province. It is located through a fertile region in which considerable hemp has been planted during the past two or three years. If peaceful conditions are maintained it will become a wealthy section of the province.

Parañaque bridge.—On account of the failure of the timber trestle bridge, 232 feet in length, erected by the military authorities in 1900 across the estero at Parañaque, Rizal, the provincial board requested insular assistance in rebuilding this structure. Preliminary investigations were authorized and plans prepared and submitted to the Commission September 9, 1904. Practically no provincial or municipal funds were available for this project. The importance of this structure to the coastal road leading southward from Manila was appreciated, but the policy of using insular funds for municipal projects was not deemed expedient.

The failure of the previous substructure was due to the action of the teredo and other sea worms. The type of bridge proposed was a similar structure, except that the piles were encased in cylinders one-eighth inch thick and 2 feet in diameter, and the intervening space filled with concrete, and the superstructure was I-beam stringers and a concrete floor. On account of conditions existing in Cavite during the spring of 1905, it was decided to expedite the reconstruction of this bridge from insular revenues which were provided by resolution of the Commission, dated February 15, 1905. Accordingly, contracts were entered into with the Atlantic, Gulf and Pacific Company, under date of February 18, 1905. Special provisions were made for expediting the work, and a timber superstructure was substituted in place of the original design, and it was completed March 15, having required twenty-two working days. The cost was ₱13,000.

Relative to highway construction two important subjects—road maintenance and permanent bridges—have demanded attention.

In general the interested governments are delaying the repairs of a highway, including its bridges, until the road becomes impassable, and the expense, approaching the cost of new construction, is beyond the resources of the province or municipality concerned, and on account of the abandoning of lands under cultivation the lack of production decreases the necessity for economical transportation.

Available provincial and municipal funds are limited and insufficient to maintain roads constructed from insular funds, and to make the minor annual repairs required to provide reasonable transportation facilities for the agricultural products already in hand. It has been difficult to organize and train maintenance gangs on the principal roads on account of the limited force of skilled foremen available. The reduction of supervisorships has also rendered this problem more difficult. Although the results of persistent effort are encouraging, yet systematic and continuous maintenance has not been attained. This problem will be of comparatively easy solution when the supervisor has more time for field work and an equitable road law has been enacted.

The necessity of proper provision for the maintenance of existing and proposed highways is at least equal to the necessity for the construction of new roads.

Culverts and even bridges of considerable span are found resting on abutments of earth held in place by bamboo poles. The anay, or white ant, in many localities will destroy timber structures in the course of a few months; but few native woods will resist their attack, and the market value of such woods almost prohibits their use for bridge construction. Along the coastal roads, where the maximum number of bridges are necessary, the use of piles is prohibited, on account of the destructive nature of the teredo, and other sea worms. A few native timbers will resist their attack for long periods. The excessive rainfall necessitates large waterways and a correspondingly long and expensive structure. The depth of a safe foundation in such localities materially increases the expenses. The severe climatic conditions, the long duration of the rainy and of the dry season, likewise hastens the decay of timber structures. On new construction it has been necessary to use considerable unseasoned timber of poor varieties or qualities, and structures so constructed have scarcely served the purposes of construction work. Oregon fir was used in the bridges built by the military authorities and in the major portion of those first constructed under the civil government. This timber will not resist the anay. It will, under favorable conditions, resist climatic conditions for a period of five or six years. Its life is about three years under the usual conditions of construction. In general the emergencies of the case have required the use of the timber most readily available.

Where available funds would not permit the construction of steel bridges, the utilization of a ford or ferry has been advocated, pending accumulating the necessary funds. For the smaller bridges or culverts, concrete, with or without reinforcement, has been used wherever practicable, and the use of timber avoided.

Standard designs for timber culverts have been prepared for use where timber was the most economical structural material; also standard designs for reinforced concrete with the steel partly or entirely protected are under preparation.

The construction of reasonably permanent bridges and culverts, demanding a minimum of maintenance, will be required as fully as available revenues will permit.

RIVER IMPROVEMENT AND CONTROL.

Protection of Santa, Ilocos Sur.—Investigations for the protection of Santa, Ilocos Sur, against the destructive floods of the Abra River were authorized by the executive secretary, September 22, 1903. They were commenced June 15, 1904, and were finished September 6, 1904.

These investigations in connection with surveys for possible work on the port of Pandan were carried on at the same time, Mr. E. S. Wheeler, assistant engineer, having charge of the field work. The cost of surveys and investigations was ₱3,946.94.

The territory covered comprises the delta of the Abra River, and extends from $2\frac{1}{2}$ miles beyond Santa out to the sea at Pandan, a total distance of about 6 miles.

A fertile coastal plain, densely populated, lies between the foothills and the coast, and in the vicinity of Santa its average width is about 6 miles. The river bed has shifted over a width of about 4 miles, cutting down the soil a depth of 10 to 20 feet, and leaving in its path barren sand and gravel bars. The Abra River is a torrential stream during the rainy season, having at extreme high-water stages a rise at "the gap" of about 40 feet above the low-water stage. The corresponding rise at Santa is about 25 feet, overflowing the banks and giving about 4 feet of water over the general level of the plain. At present the river is cutting southward and has already destroyed a considerable portion of Santa, and is threatening the church and business portion of the village. The population of the village is 1,904; the value of property endangered aggregates ₱250,032, four-fifths of which is the value of the church and convents.

The control of the Abra River, owing to the nature of the soil and configuration of the country, could be had only at an expense beyond the benefits derived, and would exceed the value of property protected.

The removal of the town to higher ground within about $1\frac{1}{2}$ miles from its present location was suggested as a reasonable solution of the problem. Unfortunately, the destruction of the church and convents will be inevitable within a few years, and these form the nucleus of the municipality. Their reconstruction under present conditions is impracticable.

Plans and estimates have been prepared on this project for action.

Protection of Calivo.—A survey to determine the extent of the damage caused by the high-water stages of the Aclan River at Calivo, Capiz, together with plans for controlling works, and the cost of same, was authorized March 2, 1904, and completed by Mr. F. D. Hayden, assistant engineer, September 15, 1904. The cost of the investigation was ₱269.22.

Mr. Hayden reports that the cost of any permanent remedy for the river encroachment would be ₱60,000, and was out of all proportion to the damage, and that but few people out of the 4,000 inhabitants of the town would be benefited by the proposed construction. It was not deemed expedient to recommend insular assistance, and no further action has been taken.

Protection of San Isidro, Nueva Ecija.—For several years the Río Grande de la Pampanga has gradually encroached upon the town of San Isidro, the capital of Nueva Ecija Province, until at present several buildings are threatened. The municipal council has made numerous requests for insular assistance, but has not taken any steps itself to check the encroachment. As per previous authorization, the project has been investigated by this bureau and a map is now being completed which will permit the formulation of a definite plan of protection. The project is strictly a municipal or provincial project rather than an insular project.

Control of the Tárlac and of the Río Grande de la Pampanga rivers.—These rivers form the principal drainage of the extensive and fertile valley extending from Manila Bay, into which the Río Grande de la Pampanga empties, northward to the Lingayén Gulf, into which the Tárlac River flows, and between the Cordillera de Cabusilan near the westerly coast of Luzón and the mountain ranges near the eastern coast. This area comprises the richest rice lands of the islands and is densely populated. The divide between the rivers is low, across which flood water from either river may be discharged into the other drainage area. While the improvements proposed for each river may be treated separately they are interdependent and each project consists of two essential parts:

(1) A control of flood water in order that adjacent lands and structures may be protected.

(2) Provisions for the irrigation of tributary areas.

Statistics collected show that the damage caused over a period of four or five years equals the estimated cost of construction. However, the collection of funds for such purposes, either by voluntary contributions or by special taxation, is impracticable, provincial and municipal revenues are limited, and insular assistance is both necessary and merited.

The Coast and Geodetic Survey have completed a primary triangulation of the entire area, gauges have been established, and data on high and low water stages are being collected by the supervisors and by special engineers detailed for this purpose.

A topographical and hydrographical survey, including the location of a levee for the control of the Tárlac River from near Tárlac to Paniqui, a distance of 13 miles, has been completed by Mr. W. G. Hunter, assistant engineer. The proposed project provides for both the control of flood water and the utilization of water during the dry season for irrigating purposes.

The construction of the proposed levee would prevent the disastrous flood, not only adjacent to the Tárlac River, but for several miles to the east of said river, and would reduce the damage on the lower stretches of the Río Grande and Río Chico fully 25 per cent. The land reclaimed and the damage prevented annually is valued at approximately three times the cost of the proposed levee.

The proposed construction is properly the first step in the general scheme of controlling the rivers of Tárlac, Nueva Ecija, Pampanga, and Bulacán provinces.

Numerous requests have been made by the inhabitants and officials of Tárlac for insular assistance. The provincial board of Tárlac states that the people of Tárlac have agreed to double the land tax for three years on all urban property directly benefited by the levee—the additional tax to be refunded to the insular treasury as a reimbursement in part for expenditures made for the work. Action on the Tárlac project is pending. The collection of the necessary hydraulic data over the entire region is in progress under the direction of Mr. H. F. Labelle, assistant engineer.

Apat Canal, Tayabas Province.—This project is outlined on page 210 of part 3, report of the Philippine Commission, 1904. Investigation and report with plans were completed by Mr. Max Dobbins, assistant engineer, February 15, 1905, at a cost of ₱1,575.

The divide between the China Sea and the Pacific Ocean at this point is a range of low hills rising abruptly from tidal swamps. The shortest and most economical route for a canal is 19.1 miles in length, ascending the Guinayangan River for 9 miles and crossing the range at the low point, which is 118 feet above mean lower low water.

The mouth of the Guinayangan River, 6,000 feet in width, is very shallow and would require extensive dredging operations about every two years. The material through which the canal would be cut after leaving the river is a marshy soil and the soft "tuff" or "adobe" rock. No feeder exists, and the project is consequently a sea-level waterway. The tide at Guinayangan is about five and one-half hours later than at the other side of the island, producing a probable maximum difference in level at the two ends of the canal of about 9 feet.

It is approximately estimated that the first cost of the canal would be ₱5,400,000; that a maximum net tonnage of 75,000 would pass through the canal the fifth year after opening to traffic, and that at the same time the probable maximum saving to shipping would be ₱30,000, with an annual maintenance charge for dredging alone of about ₱20,000. It was recommended that this project be postponed until the development of the eastern coast was such that a practicable necessity for the construction of the proposed canal existed.

Improvement of Bicol River, Ambos Camarines.—This river is navigable for boats drawing 9 feet as far as Nueva Cáceres, and during the rainy season for boats drawing 2.5 feet as far as Nabua and Lake Bato, 65 miles from the mouth. Requests were received from mercantile concerns for a survey to determine the cost of making the upper reaches of the river navigable during the dry season for boats drawing 18 inches.

An examination of the river with a view of determining the probable extent and cost of such survey was made by Mr. Max Dobbins during the month of November, 1904, at a cost of ₱281.60. The report rendered November 26, 1904, recommends a survey costing about ₱6,500, covering the entire length of the river. In view of the limited present use of this portion of the river, no further action has been taken.

HARBOR WORKS.

Temporary timber wharf at Cebú.—A report on this project appears in the annual report of the Philippine Commission, 1904, part 3, page 207.

Construction work began March 11, 1904. The date of completing work was extended from May 1 to October 1, and the contract was completed September 24, 1904. Jones & Smith, Manila, were the contractors, and the provincial supervisor of Cebú, Mr. T. Warren Allen, was appointed superintendent of the work, in so far as the interests of the government were involved.

The completed structure is 30 feet wide, with a frontage of approximately 200 feet in 15 feet of water. The old Veloso pier connects the southern end with the shore, and the northern end is connected with the shore by means of a rock-filled causeway and a trestle. Gritting and Dungon piles, imported from Borneo, were used in this construction.

The total cost of the completed wharf was ₱44,703.02, of which ₱43,719.86 was paid to the contractors.

Wharfage fees were charged by the owners of the old pier: the new structure is under the control of the collector of customs, Cebú, and its use to the public is free. The cost of discharging or loading cargoes at this wharf over the previous method of lighterage by means of cascoes results in an average saving of about ₱1 per ton of cargo, not including the expenses incurred by delays due to the scarcity of cascoes. The wharf has been in almost constant demand and has fully met the advantages anticipated through its construction.

Money statement.

Receipts:

Appropriation, Act No. 1020-----	₱40,000.00	
Resolution, Philippine Commission, October 5, 1904-----	6,470.00	
		₱46,470.00

Expenditures:

Contract dated December 29, 1903-----	43,719.86	
Incidentals, including the purchase of the Veloso pier-----	983.16	
		44,703.02

Balance available and reverting to Treasury-----	1,766.98
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Cebu and Iloilo harbor improvements.—A description of the Cebu and Iloilo harbor improvements is found in the report of the Philippine Commission, part 3, for the years 1903 and 1904, pages 206 and 210, respectively.

Work was started on the Iloilo Harbor during November, 1904, and the contractors had earned ₱66,330.50 to May 31, 1905.

The Cebu and Iloilo contracts were formally transferred during June, 1905, at which time active construction work had not been commenced on the Cebu Harbor, to the officer in charge of port works, in accordance with the provisions of Act No. 1339, dated May 4, 1905, which directed that all port works throughout the islands, including Cebu and Iloilo harbor improvements, should be under the control of that office.

Pasacao Harbor.—A survey of Pasacao Harbor for the purpose of determining the feasibility of the construction of a breakwater was authorized by a resolution of the Philippine Commission, dated February 4, 1904.

Mr. Max Dobbins, assistant engineer, and party, left Manila January 3, 1905, for the purpose of making the necessary investigations, returning January 26. The cost of the survey was ₱479.96.

Pasacao is the principal port on the China Sea for the interior of Ambos Camarines, and the northwesterly portion of Albay Province. It is the probable terminus of a railroad extending through these provinces. It is open and exposed to the full force of the southwest monsoons, and the construction of a breakwater is necessary if this port is made a harbor available for traffic throughout the year. No harbor of refuge exists nearer than San Pascual, 26 miles away.

The cost of the work required, including the diversion of an old Spanish canal which now discharges into the inlet, is estimated at ₱1,552,800 for an inner breakwater and ₱2,160,000 for an outer breakwater.

Puerto Princesa pier.—Investigations relative to the condition of the pier at Puerto Princesa, Palawan, were authorized January 6, 1904, and completed November 18, 1904, by Mr. R. A. Blair, assistant engineer. The existing pier is beyond repair, and the construction of a new one has been recommended.

Designs for both a wooden and a steel pier, with an extension of the present stone causeway, were prepared, the estimated costs of which were ₱14,520 and ₱32,760, respectively.

Puerto Princesa, at which point all supplies destined for the Inhult penal settlement can be most conveniently discharged, may become the provincial capital, in which case, increased facilities in handling cargoes, will be of considerable importance.

By the utilization of available prison labor, and by placing the work of construction under the superintendence of the provincial governor, the estimated cost of constructing a wooden pier could be reduced to ₱4,200, including the proposed extension of the existing stone causeway. Timber resistive to the teredo is locally available.

The project was submitted July 31, 1905, with the recommendation that the construction of a wooden pier be authorized, and that an appropriation of ₱10,000 be made available for that purpose. It is now before the Commission for action.

Investigations, including designs and estimates of the feasibility of constructing a pier at Legaspi, Albay, or repairing or constructing a new pier at Tacloban, Leyte, and for the improvement of the Lumbang River, in order that the town of Pagsanjan, Laguna, might be accessible to the Pasig River and Laguna de Bay by boats through the dry season, have been authorized. A survey of the latter project has been completed and submitted to the Commission for action.

Reports and records relative to these projects were turned over to the office of port works, Manila, in accordance with the provisions of Act No. 1339, above cited.

HARBOR LINES COMMISSION.

The provisions of Act No. 592 require the secretary of commerce and police to appoint a commission to make recommendations in regard to the establishment of harbor lines in such harbors, bays, and navigable rivers or lakes as he may from time to time request, with a view to the preservation and protection of such waterways. The act provides that the consulting engineer shall be, ex-officio, a member of said commission, and when port works are in progress in any harbor the engineer in charge of such works shall also be a member of the commission.

Under date of September 13, 1904, the secretary of commerce and police appointed the following members of the harbor lines commission: Consulting

engineer to the commission, permanent chairman; chief, bureau of coast guard and transportation; officer in charge of port works, Manila.

The object of this commission, as stated by the secretary of commerce and police in his letter of appointment, was to foster in every way the construction of wharves, docks, piers, marine railways, etc., but under such conditions as would not interfere with the future development of the ports, and also to guard against the granting of any monopoly which would interfere with the freedom of a port.

The most important problem studied by the commission was the determination of the harbor lines for the Pasig River from its mouth to the Ayala bridge, and harbor lines for the port of Manila. The establishment of harbor lines on the Pasig River, above the Ayala bridge, was deferred until the street system on the south bank of the river above this bridge is established, or commercial growth requires that these lines be established. This report, with tracings showing lines recommended, was forwarded to the secretary of commerce and police August 15, 1905, and approved by him.

Circular letters were issued to the supervisors of all coastal provinces, for distribution to corporations or individuals applying for permission to construct harbor works in the Philippines, outlining the method of procedure, and the information required for intelligent and prompt consideration of the application by the commission on harbor lines.

Harbor lines were also prescribed for the port of Nueva Cáceres, Ambos Camarines, and specific limitations imposed on various harbor improvements for which concessions were granted. (See Tabulation of franchises.)

The following tabulation shows the more important franchises granted by the commission during the fiscal year, in connection with which investigations or approvals were required of the harbor lines commission or the bureau of engineering.

Franchises or concessions granted for public improvements during fiscal year 1905.

Name of applicant.	Location.	Province.	Nature of concession.	Authorization.	Remarks.
Carson, Charles.	Mercedes-Daet.	Ambos Camarines.	Tramway (animal power) 4.5 miles.	Act No. 1111	Completed and in operation
Arnalot, Ignacio.	Tayabas	Tayabas	Water-power development.	Act No. 1262	Do.
Fernández, Juan	Opon, Mactan Island.	Cebu	Marine railway.	Act No. 1256	In progress.
Do	do	do	do	Secretary of commerce and police, Jan. 6, 1905.	Do.
Chang Hang Lin (Cho Yu).	Iloilo	Iloilo	do	Act No. 1223	Completed and in operation.
Gutiérrez Hermandos.	Legaspi	Albay	Wharf	Secretary of commerce and police, Apr. 8, 1905.	Under construction.
Do	Nueva Cáceres.	Ambos Camarines.	do	Secretary of commerce and police, June 17, 1905.	Do.
Figueras Hermandos.	Iloilo	Iloilo	do	Pending receipt of plans.	

NOTE.—The franchises above mentioned pertaining to harbor works were submitted in all cases to the harbor-lines commission for their examination and recommendation to the secretary of commerce and police.

Next in importance to the subject of transportation, which has been the principal work of the bureau since its creation in January, 1903, the subject of irrigation is, on account of its large importance, demanding attention. No opportunity of making a general study of this subject has been available, the only consideration being that given to the special investigations authorized.

Calamba irrigation.—In a letter dated April 25, 1905, Mr. Sherfey, provincial supervisor, Laguna, invited attention to the bad condition of irrigation works on the Calamba hacienda, one of the friar land estates to be purchased by the government, and particularly to the dam in the San Juan River. This dam, located about 3 miles from Calamba, has a total length of about 275 feet on top, a maximum height of about 25 feet, and a spillway nearly 175 feet long.

Under date of May 5, the secretary of commerce and police authorized the investigation, and on May 26 Mr. Max Dobbins, assistant engineer, was directed to proceed to Calamba hacienda and make an investigation of the irrigating works in question.

Mr. Dobbins reported July 5, and his report was forwarded to the secretary of commerce and police July 31. The dam was built about 1760, and irrigates some 740 acres, now containing about 120 tenants. The report shows that the apron of the dam is entirely washed away and a cavity about 10 feet deep has been eroded up to and under the toe of the dam. A slight leakage exists at the center of this hole; the toe of the dam on both sides of the break is, however, intact, and the main wall section safe from danger of overturning.

The repairs needed consist of the reconstruction of the apron and some minor repairs around the headworks. In view of the fact that this estate has not been transferred to the government and that no immediate danger to the structure exists, no recommendations relative to the prosecution of this work are submitted.

Friar-land estates, Cavite.—The municipal council of Naic, in a resolution dated December 28, 1904, imposed a tax of 15 centavos for every 1,000 square meters of land benefited by the irrigation system on the estate, for the purpose of making needed repairs. While the legality of this tax was in dispute, the provincial officials agreed that some measure of this nature should be adopted, and expressed the opinion that the value of the lands benefited would not make the small tax imposed irksome. The question was submitted to the attorney-general, but no decision has yet been rendered. The valuation of these irrigation works by Señor Villegas was ₱90,000 Mexican. The total area of the Naic estate is nearly 20,000 acres, of which about 7,000 or 8,000 adjacent to the coast are irrigated.

General authority to investigate the irrigation works on the friar lands in Cavite was given by the governor-general by telegram, under date of April 25, 1905.

Mr. H. F. Labelle, assistant engineer, was directed, March 16, to proceed to Cavite and investigate the condition of irrigation on the Naic hacienda, and later (May 10) on the Imus, San Francisco de Malabón, and Santa Cruz de Malabón estates, and the Bancod-Paluit system.

Of these friar lands the San Francisco de Malabón and Imus estates are the only ones in Cavite Province, the purchase of which had been consummated by the government, and work of leasing individual holdings to the tenants was begun on the San Francisco de Malabón estate, to whom first aid had been promised in repairing these works.

Mr. Labelle's final report on these investigations was rendered under date of June 8, 1905, and forwarded by indorsement to the secretary of commerce and police under date of July 31. The report covers only about 50 per cent of the total number of dams, although it represents about 90 per cent of the total value of the works. The total length of dams examined and reported upon aggregates about 7,000 linear feet, and the estimated cost of repairs is placed at ₱11,300, apportioned as follows:

Imus estate.....	₱3, 600
San Francisco de Malabón.....	2, 400
Santa Cruz de Malabón.....	2, 300
Naic	1, 800
Bancod-Paluit system.....	1, 200
	<hr/> 11, 300

The total area of these estates is 116,364 acres, of which it is estimated that 25,935 acres are, or have been, under irrigation, subdivided as follows:

Hacienda.	Total area as per resurvey.	Irrigated area, ap- proximate.	Area un- der culti- vation, ap- proximate.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Naic	18, 831	4, 199	9, 880
Imus	45, 080	15, 314	24, 700
San Francisco de Malabón.....	28, 279	8, 705	13, 338
Santa Cruz de Malabón	24, 194	2, 717	12, 350
Total	116, 384	25, 935	60, 268

If the work of repair is immediately undertaken it will be comparatively simple, while if it is delayed for any length of time the cost will not only become excessive but may result in the loss of part of the works.

The extensive irrigation development of Cavite Province is the growth of more than a century's intelligent work, carried out under exceptionally favorable labor conditions which do not to-day exist. These works compare very favorably with similar works in any part of the world. With water available during the dry season two crops a year can be raised, the crop for the dry season being estimated at from 30 to 60 per cent of the value of the wet season crop.

The following is abstracted from Mr. Labelle's report:

"The dams of Cavite offer a great variety of profiles. The section, at least in the larger dams, is always generous. With the exception of the Tres Cruces dam, where the batter is very steep, probably a little over one-fourth to one, and which is reinforced by heavy buttresses, the downstream slope of the dam is invariably one-half to one or over.

"The downstream face is either stepped, straight, or with the ogee profile, or rather a straight face with a curve at the top and another forming an apron at the bottom. In the stepped profile the courses are laid horizontally, and with the same thickness of bed from bottom to top. This thickness of bed never exceeds 2 feet, and is more commonly nearer 15 inches. Even in the dams with straight profile the face stones are generally laid with horizontal joints, the required bevel being given to the face. In the curved profiles the face masonry is generally laid normally to the curve.

"Lime mortar seems to have been used exclusively. Only in exceptional cases is Roman cement mortar seen.

"Notwithstanding the general use of common lime mortar in the dams of Cavite, leakage through the dams seldom exists, and the leaks met may have been caused by dislocations produced by earthquakes. These earthquakes, however, never caused any considerable damage to the dams in the district. Only one dam, the Marcelo Dam, has developed any crack, and this may have been caused by a settlement of the masonry just over the cave excavated under the dam by the falling water, for the crack mentioned above is in that part of the dam just above the cave. There is, however, no leakage through the crack, and it may be a superficial one only.

"The experience with Cavite dams shows that there is nothing to fear for their stability on account of earthquakes, and that it will not be necessary to adopt an additional factor of safety on that account.

"There is a marked difference in the condition of dams in the different estates of the district. In the Imus estate, which has the greater number of dams, the works are in a great deal better shape than those of the neighboring estates.

The Recoletos, the former owners of the Imus estate, seem to have taken better care of their property, the repairs seem to have been made diligently, and both the designing and construction of their works show more intelligence. The works in San Francisco and Santa Cruz show a sad state of neglect, and this may be due to the earlier abandonment of the lands in these estates due to the greater activity of the insurgents in these parts.

"The main deterioration in the dams the writer has seen appears to be met in the aprons of dams with curved profiles; in fact, there are very few aprons which will not require considerable repairs.

TUNNELS AND CANALS.

"Above each dam, and in close proximity to it, there issues a tunnel or canal which conveys the water to the main irrigation ditch, usually located by the side of the main roads and invariably located on the west side of the same. These main ditches are generally supplied by more than one river, as is exemplified in the Cancaan-Sabuing-Camarin system near Dasmariñas.

"Another way of conducting water across the country is as exemplified in the Bancod-Paluit system, where water from one river is taken over several other river by means of aqueducts to the point of distribution, the water of the rivers spanned being used farther down the country and running into other dams.

"From the main ditches mentioned above start both secondary canals and laterals in different directions. There are also main ditches not in close proximity to roads, but these are of minor importance.

"In the building of their dams and canals the irrigators of Cavite have given first importance to the elevation of these canals in order that they might reach

more lands, and they have generally neglected the question of storage. The bottom of the tunnels and canals are in most cases not more than 4 feet below the top of the corresponding dam, and in the majority of cases much less. The water stored below the canal bottom can not be used, and the reservoir is liable to silt up to that level.

"In attempting to save head in their tunnels the irrigators of Cavite have often given too little slope to these structures. In some places the want of velocity resulting from these slopes has caused sediment to deposit itself in the tunnels in greater and lesser quantity, the average thickness being less than one foot. Besides this silting and vegetable growth in canals, the waterways are in good order.

"The tunnels examined resemble closely one another in section. They are from 4 to 7 feet wide and from 5 to 7 feet high. They are cut through the country rock and have no lining, but are generally provided with a cut-stone arch at the portals. The form of the tunnel arch is either circular, elliptical, and in one instance (at the Molino Dam tunnels) the Gothic arch has been used. These arches are for the most part in good condition.

"Several of the tunnels, especially the longer ones, have shafts. These shafts are sometimes lined with masonry, and they facilitate the cleaning of the tunnel.

"More than half the canals and tunnels issuing from dams have no head-gates or regulating works. Some have grooves for stop planks, varying from $1\frac{1}{2}$ to 4 inches.

"The Molino Dam is the only one which has iron gates operated by a stem at the head of its waterways. Iron gates are also provided at some of the aqueducts."

The following tabulation shows the principal elements of the Cavite dams which have been examined.

Cavite dams.

IMUS ESTATE.

No.	Name.	Height.	Length.	Length of spillway.	Width of crest.	Profile.		Batter.	
						Down-stream.	Upstream.	Down-stream.	Up-stream.
1	Alapan	<i>Feet.</i> 15	<i>Feet.</i> 75	<i>Feet.</i> 8		Ogee		$\frac{1}{2}:1$	
2	Julian	20	80	6		Stepped		$\frac{1}{2}:1$	
3	Tanang Luma	8	130	6		Straight	Vertical	$\frac{1}{2}:1$	
4	Molino	50	900	200	10-16	do	do		
5	Lige	40	150	15		Ogee			
6	S. Guillermo	12	30	3		Straight			
7	Puac (Bucal)	15	80	10					
8	Salitran	20	150						
9	Paso Castilla	28	100	18		Straight		$\frac{1}{2}:1$	
10	Asan or Sabuing	20	50			do		(a)	
11	Camarin or Casundit	25	75	30		Stepped		$\frac{1}{2}:1$	
12	Camarin, small	12	40	4					$\frac{1}{2}:1$
13	Das Marinas or Abad	25	60	7				$\frac{1}{2}:1$	
14	Nangcaan or Cancaan	22	50	5				$\frac{1}{2}:1$	
15	San Agustin	22	55	10				$\frac{1}{2}:1$	
16	Luculjin	26	240	75	12				$1:1$
17	Trapiche	28	200	12					
18	Embarcadero	60	200	140	15	Stepped and straight.		$\frac{1}{2}:1$	
19	Baluctot	25	100	60	6				
20	Baluctot, small	10		25	5				
21	Buaya	25	275	120	3			$\frac{1}{2}:1$	
22	Zacalat	17		100	4				
44	Santol								

SAN FRANCISCO DE MALABÓN ESTATE.

23	Marcelo	30	100	50	6				
24	Del Pueblo (Bayan)	30		100	3				
25	Pollicena	50	143	110	12	Ogee	Stepped		Stepped.
26	Palanas	12			6				
27	Bulac	50	180	27	5	Straight and curved at bottom.	Stepped		
28	North of Buenavista		220	22	4				
29	Palault	80		50	5	Ogee			

a Nearly vertical.

Cavite dams—Continued.

SAN FRANCISCO DE MALABÓN ESTATE—Continued.

No.	Name.	Height.	Length.	Length of spillway.	Width of crest.	Profile.		Batter.	
						Down-stream.	Upstream.	Down-stream.	Up-stream.
30	Palauit.....	Feet. 35		Feet. 120	Feet. 10	Straight.....			
31	Sampalucan.....	20	180	36	6	do.....			
32	Butas.....	75		125	6				
33	Bato.....	25		30	3	Ogee.....			
34	Igme.....	20	100	20					
	Sabang.....			82	10	Ogee.....	Straight.....		

SANTA CRUZ DE MALABÓN ESTATE

35	Tres Cruces.....	65	730	11-75 11-40	}.....	Straight.....		4:1	Top 31 vertical.
36	Legidero.....	15	300						
37	Pago.....	20	350						
38	Singo.....	20	300	40				4:1	
39	Dominico.....	40		120	45				
45	Pataynallat.....								
	Mabalon.....	44		36	18				
	Saguin.....	19		35	11				

NAIC ESTATE.

40	Balaianan.....	25				Ogee.....			
41	Calumpang.....	40		100	20	Straight.....		6:12	
42	Talon or Alang.....	25		120		Stepped.....			

BANCOD-PALAUIT SYSTEM.

43	Bancod.....	40		70	10	Ogee.....			
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IRRIGATION IN ILOCOS NORTE.

Laoag.—Supporting a resolution of the municipal council of Laoag, under date of December 14, 1904, by resolution dated December 23, 1904, the provincial board of Ilocos Norte requested the detail of an engineer to make a study of the irrigation problem at Laoag. The water is to be brought from the Vintar River for the irrigation of lands within the jurisdiction of Laoag, a municipality with a population of 32,000.

This detail was authorized by the secretary of commerce and police under date of March 15, 1905, and under date of April 3 Mr. H. F. Labelle, assistant engineer, and party were directed to proceed to Laoag for the purpose of making this investigation.

Surveys were still in progress at the close of the fiscal year.

San Nicolás.—A petition from the barrios of the pueblo of San Nicolás, which is consolidated with the municipality of Laoag under date of April 22, 1905, asked for surveys and plans to be made for the purpose of bringing water from the Laoag River to San Nicolás for irrigating purposes.

This survey was authorized by the secretary of commerce and police May 23.

Dingras.—The municipal council of Dingras, under date of April 11, forwarded a petition requesting the services of an engineer to investigate the feasibility of conveying water from the Cadaclan River to the Bacul plain. This additional survey was authorized by the secretary of commerce and police under date of June 2, 1905.

Mr. H. B. Kirkpatrick, assistant engineer, and party, who were in the field on the Laoag investigation, were telegraphed to make the San Nicolás and Dingras surveys June 8.

These three investigations in Ilocos Norte were under prosecution at the close of the fiscal year.

MISCELLANEOUS IRRIGATION QUESTIONS.

Pangasinán Province.—Irrigation on an extensive scale has been agitated for the province of Pangasinán. The municipal council of Mangaldan, under date of May 2, 1904, passed a resolution for the repair of the irrigation canals of that municipality by two days compulsory labor of all male residents between the ages of 18 and 55, with the exception of the sick or physically incapacitated, municipal employees and teniente councilors, with the proviso that a payment of 50 centavos for each day would secure exemption. This work was to be done under the direction of the municipal authorities. It was requested that the Commission enact a law covering these points, but no further action appears to have been taken.

Bataán Province.—The bureau of forestry requested the services of an engineer for determining several problems in connection with irrigation of their nurseries at Lamoá, Bataán Province, Mr. W. G. Hunter was detailed for this purpose and rendered the necessary assistance.

Tayabas Province.—By resolution, dated November 28, 1904, the provincial board of Tayabas requested the sum of ₱5,000 for the construction of a dam in the Napo River, municipality of Santa Cruz, Marinduque, for irrigating purposes. This request for this specific sum was made without estimate or consultation with the supervisor, and a report was requested from that official on the feasibility of the scheme and the amount of money required. It was decided that the bureau of engineering should make an investigation of the subject, and it was agreed by the province to pay the necessary expenses of the party while in the field investigating this subject. The survey is to be taken up in the near future.

Agricultural farms.—Advice regarding irrigation of the agricultural farms at Murcia, Tárlac, and the San Ramón farm, Occidental Negros, was furnished, and information requested as to whether surveys were desired.

The following tabulation shows the principal irrigation systems of which investigations have been made during the fiscal year:

Hacienda or town.	Province.	Date authorized.	Approximate area irrigable.
Calamba estate.....	Laguna.....	May 5, 1905	Acres. 740
Friar lands.....	Cavite.....	Apr. 25, 1905	25,985
Laosag.....	Ilocos Norte.....	Mar. 15, 1905	2,500
San Nicolás.....	Ilocos Norte.....	May 23, 1905	10,000
Dingras.....	Ilocos Norte.....	June 2, 1905	2,500
Santa Cruz.....	Tayabas.....	(a)	.....

* Not authorized.

A brief discussion of the conditions existing in these islands, relative to the subject of irrigation and the need of expert advice in meeting these conditions and preparing for future development along these lines, follows:

No maps suitable for a preliminary study of irrigation problems are in existence. Topographical work in progress by the military and constabulary, and the scientific maps of the mining and forestry bureaus, are for specific purposes. In general, existing maps are deplorably deficient and inaccurate in so far as relates to interior topography. There have been no systematic gaugings of streams or exploration of storage reservoirs outside of a few specific and recent cases. While the excellent results secured by the weather bureau relative to rainfall are of great value, the location of observation stations has been based on climatological reasons and not on the needs of the development of irrigation.

More particularly the present laws are notably deficient in the protection of water rights, and the drafting and enactment of equitable laws protecting such rights and encouraging the development of irrigation systems is of prime importance.

In 1866 the Spanish Government enacted its "Laws of water," and applied them by royal decree to the Philippines. Other laws were enacted about 1880 and the laws of 1866 were annulled in so far as they were applicable to Spain itself. Questions have arisen regarding the exact status of the laws of water of 1866 to the Philippines. All of these laws relate more especially to the

protection of land rights adjacent to tidal waters and navigable streams. Various customs and precedents prevail, differing somewhat in each locality. The Philippine Commission has passed no laws relative to irrigation water and land rights. In view of the extensive irrigation projects existing practically throughout the islands, it appears of immediate importance that such laws should be drafted and enacted at an early date in order that the water and land rights of irrigable areas may be properly protected and the establishment of small freeholders expedited. The importance of this idea should be considered in connection with the facts that under Spanish times the creation of large estates and a protection of their interests was the prevailing tendency, while under American laws the creation of small freeholders and an equitable preservation of their rights will be necessary in the development of a middle class, which is almost entirely lacking to-day. It is also evident that such laws shall take into consideration past laws and precedents and the existing rights and works of construction, the present value of which aggregates several million dollars, and attain to a healthy, equitable, permanent agricultural development.

The old Spanish laws relative to compulsory labor (requiring forty days' service up to 1883) and the control of the great mass of the people by the caciques, which power is only partially broken to-day, have created serious conditions, and should be considered and contrasted as much as possible in the drafting of new proposed laws.

The long-continued dry season prevents the development of two or more crops and endangers the success of one. Irrigation is extensively practiced to a greater or lesser degree throughout the islands. These works may be divided into two classes: (1) Works which utilize water from adjacent rivers available throughout the year; (2) works which utilize and conserve the rainfall only.

The most notable works are the extensive dams, tunnels, and ditches constructed by the friars and the remarkable developments practiced by certain Igorrote tribes.

The friar lands enumerated in the contracts signed December 22, 1903, aggregate, including the two large estates not surveyed, 158,008 hectares. Most of these estates possess large irrigating works which, heretofore under the control of one organization, are now passing into the hands of many, and no method of preserving irrigation works has been devised.

Tabulations on the friar lands follow. The limited time and men available necessitated that the resurvey of these lands be confined to a determination of the boundary lines only, and the values of the areas subject to irrigation or which may be advantageously placed under an irrigating system are therefore approximate.

Friar land estates.

Name of estate.	Area in hectares.	Lands under cultivation.	Lands susceptible of irrigation.	Principal crop.	Second crop.
AUGUSTINIANS.					
Dampal	929	929	929	Rice	Sugar cane.
Recoleta	512	512	512	do	Do.
Alang-ilang	256	256	256	do	Do.
Malapad	8	8	8	do	Do.
Matamo	12	12	12	do	Tobacco.
Binagbag	295	262	281	do	Do.
Malinta	3,574	3,574	3,574	do	Sugar cane.
Tala	6,696	4,808	4,808	do	Do.
Piedad	3,860	3,139	3,139	do	Do.
San Marcos	87	81	87	do	Do.
Anibon	72	72	72	do	Do.
Bartjan	57	57	57	do	Do.
Daquila	40	40	40	do	Do.
Malabón	11,449	5,399	11,449	do	Rice, sugar cane.
Balinad	1,925	781	781	Sugar cane	Rice, corn.
Talisay	8,020	3,069	3,069	Rice	Sugar cane, corn.
Isabela	19,891	(?)	19,891	Tobacco	Rice.
Muntinlupa	2,827	2,827	2,827	Rice	Do.
Total	60,511	24,926	50,892		
DOMINICANS.					
Lolomboy	4,901	3,935	4,901	Rice	
Santa María	10,340	10,339	10,339	do	

Friar land estates—Continued.

Name of estate.	Area in hectares.	Lands under cultivation.	Lands susceptible of irrigation.	Principal crop.	Second crop.
DOMINICANS—cont'd.					
Toro.....	59	59	59	Rice.....	
Lolomboy.....	142	142	142	do.....	
Lolomboy.....	76	76	76	do.....	
Orion.....	916	916	916	do.....	Sugar cane, rice.
Nalc.....	7,624	7,624	7,624	do.....	Sugar cane.
Santa Cruz.....	9,795	9,795	9,795	do.....	Do.
Calamba.....	13,673	11,583	11,583	Sugar cane.....	Rice.
Santa Rosa.....	5,470	5,470	5,470	do.....	Do.
Bifian.....	3,659	3,659	3,659	Rice.....	Sugar cane.
Total.....	56,654	53,548	54,514		
RECOLLECTOS.					
Imus.....	18,243	12,043	12,043	Rice.....	Sugar cane.
San José.....	22,661	(?)	20,000	Pasture.....	Rice.
Total.....	40,904	12,043	32,043		
Total.....	158,069	90,517	137,449		

The area under cultivation in the Isabela and San José estates is not known, but it is probable that a fair percentage of the area in Isabela is under cultivation, while San José has mostly pasture lands and a large percentage of virgin lands.

The bureau of public lands will soon require explicit irrigation laws and regulations for its work in the subdivision and sale of these estates; the same fact applies to the lands and water of public lands likewise under the charge of that bureau. The bureau of agriculture is interested in this question, not only for its experimental farms, but also in its relation to private parties seeking instruction and assistance. These laws must also be applicable to all private irrigated or irrigable lands in the islands.

Already the Commission has had numerous requests for assistance in making the necessary surveys and designs, and for the construction of the desired works. Municipalities have endeavored to create laws to meet local needs. The following two abstracts illustrate this statement.

Under date of May 2, 1904, the municipal council of Mangaldan, province of Pangasinan, adopted a resolution for the purpose of repairing the irrigation canals of that municipality, the work to be carried out under the superintendence of the municipal authorities. An abstract follows:

" * * * It is ordered that the male residents of this municipality between the ages of 18 and 55 years shall be compelled to work without pay on the said repairs two days in the year each, providing that the persons who are physically incapacitated or who are sick, municipal employees, and the teniente councilors shall be exempt from such labor. These latter, however, shall superintend the said work. * * *

" * * * Any person shall be exempted from such labor upon the payment of 50 centavos for each and every day he is so exempted. * * *

" * * * The said funds shall be invested exclusively in the building of dams, irrigation canals, and in the purchase of necessary tools * * *."

The municipal council of Nalc, Cavite Province, December 28, 1904, passed a resolution deciding that—

" * * * They should take it" [repair of irrigating work] "up by their own account and endeavor to preserve the system of irrigation which exists at present for the benefit of agriculture, by contribution of those who are benefited by said irrigation. This proposition was approved unanimously by those present in the meeting, and a tax of 15 cents for every 1,000 square meters was assessed to be paid by the persons benefited in the irrigation * * *."

These resolutions have been forwarded to the respective provincial boards and to the Commission for approval. Their legality is under examination by the attorney-general.

Practically all provincial and municipal requests for surveys and investigations of irrigation projects have been granted by the Commission, but it is not practicable or desirable for the government to enter the field of construction without compensation, or to extend to one locality assistance which available funds will not permit extending to other localities under similar conditions.

The special point to which attention is invited is the necessity of legislation—the enactment of wise laws which shall meet these conditions in an efficient manner.

The following tabulation is compiled from the recent census of the Philippine Islands:

Comparative yield of rice crops, with and without irrigation.

[Yield in cavans for 1 cavan of seed.]

Location.	Irrigated.	Not irrigated.	Highland.	Remarks.
Pangasinan	80	50	40-60	.....
Cavite (Imus)	75-100	50	30-60	.....
Rizal and Pampanga	25-40	.....	(b)	25-20
Batangas	30-40	15-30	.....	.....
Ambos Camarines	60-100	30-50	.....	.....
Laguna (Calamba)	^a 60	.....	(c)	35-25
Cavite (Naic)	470	.....	(c)	50-20
Zambales	50	.....	(b)	25
Mindoro	^d 30-40	70	.....	.....

^a Per 2 cavanes of seed.

^b Sandy soils.

^c Two crops.

The area represented by a cavan of seed varies in different provinces; it averages about one-half hectare.

The increase shown in some provinces is as high as 100 per cent, and in a few locations no crop can be raised without irrigation. While the average rainfall is excessive, it is at times irregular and deficient throughout the islands, and staple crops are correspondingly uncertain.

The following shows the value, in United States currency, of imported rice from 1899 to 1904, as per the third special report of the Philippine customs:

1899	\$1,938,932
1900	3,186,198
1901	5,490,958
1902	6,578,481
1903	10,061,323
1904	11,548,814
Total	38,804,706

The value of rice imported during the year 1905 is estimated at \$3,500,000.

This heavy importation is doubtless due to the ravages of cholera, the destruction of draft animals by rinderpest and surra, the establishment of a new currency, the unsettled agricultural conditions, etc., a series of events which can not again simultaneously occur. It represents a deplorable condition when it is clearly evident that under healthy agricultural conditions the islands should be heavy exporters of food stuffs.

In different parts of the islands, principally in the island of Luzón, there are many irrigation works of more or less magnitude, and for the greater part in indifferent or poor state of preservation. The best works are met on the estates previously owned by the friars. The irrigation development on these estates in the Province of Cavite form a system unique in itself, and which probably has no peer in any part of the world. It is the outcome of more than one century of intelligent development, carried out under exceptionally favorable conditions of labor, which do not exist at the present day. The works in existence form a valuable asset to the country, and if properly restored and supervised should become an important source of revenue to the province.

Owing to the disturbed state of the country since 1895, these and other works in the islands have been neglected, and they do not now accomplish their object; nor are they able to supply their normal volume of water to the lands which are tributary to them. Moreover, the system of control and administration estab-

lished during Spanish times has practically ceased to exist, and unity, and effectiveness in the operation of the works has disappeared.

It is clear that the restoration and gradual extension of these works, as well as the creation of others, will contribute not only to the increase of public health, but will be an important agency in quieting the political unrest prevailing in some provinces and facilitate the development of small farm ownership.

In order that these works may be conserved, that the improvements already proposed by the land owners and various municipalities may be no longer delayed, and that the creation of small land holders may be fostered, and all irrigable land and its water rights may be utilized and preserved, equitable laws and regulations should be enacted. They should be based on the following considerations and influenced thereby:

(1) The Spanish laws under which the present somewhat extensive systems have been constructed, maintained, and operated;

(2) The customs of the people and the various local regulations relative to these rights already in use by common consent;

(3) The best practice prevailing in the United States and foreign countries.

Credit for the work already accomplished is due principally to the friars, who controlled to a large extent the operations of the Spanish compulsory labor laws. Existing bureaus have not the time or men available for the proper prosecution of the subject or for collecting the data desired by the Commission on which wise and intelligent laws may be based.

The following plan is respectfully suggested for consideration: That an expert in irrigating matters be selected from the irrigation or reclamation service in the States to visit these islands for a period of about one year, his position and salary to be retained in the United States service, his expenses to be paid by the insular government, together with such additional salary as may be necessary. He should be familiar with the legislative failures in our Western States as well as with the present laws, strong as an organizer and as a constructor, acquainted with the Spanish language and somewhat with the customs of Spanish dependencies and tropical conditions.

His principal duties should be:

(1) To acquire an accurate knowledge of existing works of construction and the importance of an effective system of maintenance and extension of such works to the agricultural development of the islands.

(2) To study the Spanish laws now in force relating to the subject of irrigation, and the customs relating to the use of irrigating waters which, on account of usage, become more or less equivalent to legislative enactments.

(3) To prepare for the consideration of the Philippine Commission revised or proposed laws which shall promote irrigation and protect the rights of land owners and water users. Such laws should be based on the best practices prevailing in the States and tropical countries, modified by local usages, laws, and customs, and its enactment should prevent the abuses and enormous expenses which have been incurred in the development of irrigating systems in our Western States.

(4) To assist in the organization of a division of irrigating, preferably under an existing bureau, the special duties of which should be to collect the necessary data, prosecute authorized surveys, supervise authorized constructions, and provide for an inspection of the maintenance and operation of the completed works, or, in brief, to carry out the provisions of the law.

LAND SURVEYS.

Inhuit penal settlement, Palawan.—Under date of December 14, 1904, the warden of Bilibid Prison, in a letter to the secretary of the interior requested that the entire valley on the island of Palawan in which the Inhuit penal settlement is located be reserved for a penal settlement. The secretary of commerce and police authorized the necessary survey January 3, 1905, and Mr. B. G. Fogg, assistant engineer, was detailed to accomplish this work. The party left Manila January 23, arriving at Puerto Princesa January 29. Thirty Bilibid prisoners were employed as laborers. Surveys were completed, and the party returned to Manila May 14. The expenses of the survey were ₱4,679.03.

A map was prepared showing detailed topography over the fertile portions of this valley sufficiently accurate for selecting building sites and preparing plans for irrigation. The valley was found to have a maximum length of about 10 miles and a width of about 5 miles. Eleven monuments were set and

a description of the tract given for the purpose of creating a government reservation, in accordance with the required procedure.

Military reservations, Manila.—Under date of January 21, 1905, the city engineer of Manila requested aid from the bureau of engineering in making surveys of the military reservations in and around Manila. This detail was authorized by the secretary of commerce and police January 23, 1905, and a party of 5 Americans and 2 natives, under the charge of Mr. F. D. Hayden, assistant engineer, was detailed for the survey of Fort Santiago for a period of about fourteen days.

Grading exposition ground, Manila.—Under date of February 21, 1905, the secretary of the interior requested estimates on the cost of filling the lowland on the exposition grounds and the tract to the east of the exposition grounds.

A survey was made by Mr. R. A. Blair, assistant engineer, and it was found that 52,400 cubic meters of material would be required to give a uniform elevation of 12.20 meters above city datum, which conforms to the finished grade of the two adjacent streets. The average fill would be 0.7 meter. The survey also included a small piece of land adjacent to this property belonging to the plot set aside for the government laboratories, which would require 5,600 cubic meters of material. These figures include the volume of soil required, which, for a depth of 0.15 meters, amounts to 9,000 and 600 cubic meters, respectively.

It was proposed to fill these areas from the harbor excavation by means of the hydraulic dredge now operating in Manila Harbor. No contracts for this purpose were entered into.

Mariveles water-supply reservation.—The survey of the tract of land which furnishes the water supply for the quarantine station at Mariveles, Bataan, for the purpose of creating a government reservation was authorized October 7, 1904. This survey was completed by Mr. R. A. Blair, assistant engineer, February 21, 1905. A topographical map was prepared, showing the extent of the watershed, the position of the dam, the location of the pipe line, and the situation of the quarantine station.

The cost of the survey, including both field and office work, was ₱784.96.

Busuanga land survey.—The detail of an engineer to assist a representative of the attorney-general's office in making investigations regarding the titles to certain lands in the island of Busuanga was authorized November 30, 1904. Mr. R. A. Blair, assistant engineer, completed his survey December 22, 1905.

Fifteen haciendas were examined and the previous surveys found to be very inaccurate; sketches and notes were made on the original maps of these haciendas relative to the errors found, and the maps were filed with his report.

The cost of the surveys was ₱305.29.

La Granja Modelo farm survey.—A survey of La Granja Modelo, Occidental Negros, was completed December 8, 1903, by Mr. J. C. Mulder, and forwarded to the secretary of commerce and police March 25, 1904. The question of title and exact boundary lines arose, and, under date of October 14, 1904, authorization was received for the resurvey and monumenting of the boundary between the Alejandría hacienda and the La Granja Modelo farm. Mr. R. Suter, assistant engineer, was detailed for this work and a resurvey was made of these estates, the boundaries monumented, and descriptions of the areas involved made and forwarded for record in the court of land registration under date of March 27, 1905.

The area of Alejandría hacienda, according to this survey, was determined to be 121.698 hectares, and the area of the La Granja Modelo farm 563.1463 hectares.

ARTESIAN WELLS.

The prevalence of intestinal diseases, which cause nearly 10 per cent of the total number of deaths, and the frequent occurrence of cholera epidemics have called special attention to the available water supplies throughout the islands. In many localities the only source consists of shallow wells unprotected against surface drainage; excepting a few supplies derived from springs, all supplies are more or less contaminated and dangerous. The need of securing potable water free from surface contamination, as a health measure, is of vital importance.

A few artesian wells have been previously drilled by the Manila Railway Company and by the military authorities. Such data as were available on these projects have been secured. All of these wells are in the vicinity of Manila, and from the data collected it may be predicted that a supply of potable water

can be secured between a depth of 500 and 1,000 feet. The success of artesian wells on the smaller islands which possess limited watersheds remains to be demonstrated.

Through requests from the Province of Ambos Camarines, the purchase of a well-drilling outfit was authorized by resolution of the Commission under date of November 27, 1903. Requisition for the same was forwarded to the insular purchasing agent January 1, 1904, and the outfit was received in August, 1904. The equipment includes a supply of fishing tools and duplicate parts. The total cost was ₱7,576.44.

The entire charge of this machine, including all expenses incurred in its operation, was placed under the bureau of engineering. The depth to which this machine can economically drill is about 700 feet. The need of a standard outfit has arisen and authority for the purchase of the same has been granted.

It is probable that a system of driven wells of low first cost will afford increased protection to the present available supplies, although such wells will not be entirely free from contamination. Plans for experiments along this line are being perfected.

Engineer Island well, Manila.—This well was the first one drilled with the new Pierce outfit; it was drilled under the immediate direction of the bureau of coast guard and transportation, with the outfit subsequently turned over to the bureau of engineering.

The actual cost of the well drilled was ₱4,309.56. The well reached a depth of 582 feet, and was completed in about three months' time.

It has been in successful operation and at present its capacity meets the needs of that bureau. It is probable that with an increase in its machine shops and repair plants another well will be needed.

Well at Singalon experimental station.—A request for the drilling of a well on the farm of the Singalon experimental station was made by the chief, bureau of agriculture, under date of August 26, 1904. This request was granted, and by resolution of the Commission, dated November 23, 1904, the bureau of engineering was authorized to prosecute the drilling of the proposed well for the purpose of furnishing water for irrigation. The payment of all expenses incurred from the appropriation for public works, bureau of engineering, was also authorized.

This work was begun December 1, 1904, and completed January 21, 1905. The well is 607 feet deep; the length of 6-inch pipe driven was 550 feet, and the total cost of the well was ₱3,310.09—an average of ₱5.45 per foot. Under favorable circumstances the rate of drilling was 25 feet per day.

The water was tested at the government laboratories and was found to be suitable for boiler purposes, but not for drinking. A test of the capacity of the well was made by means of a fire engine from the Manila fire department, which gave a discharge of 78 gallons per minute when the water in the pipe was 23 feet 4 inches below the surface of the ground. An ordinary suction pump will furnish a discharge of 60 gallons per minute.

Plans were also prepared for the use of a deep-well pump giving a flow of about 220 gallons per minute.

This well has been under satisfactory operation by means of a suction pump since February, 1905.

Well at Iloilo, Iloilo.—Correspondence relative to a payment by the municipal council of ₱8 per foot in case potable water was found, and an offer of ₱1,500 from Messrs. J. G. White & Co., contractors, for the free use of suitable artesian-well water for boiler purposes, while the harbor improvements were under construction, provided the well was drilled within forty days, caused the authorization for the drilling of the well at Iloilo, and work began February 9, 1905. Water was struck March 7 between 225 and 230 feet with a good flow, but an analysis of the water by the government laboratories showed it to be unfit for either boiler or drinking purposes. On account of the nature of the material encountered after a depth of 700 feet had been reached, progress was extremely slow and expensive, and on June 27, at 805 feet, it was directed that the work be suspended. It was therefore suitably plugged for possible future development with a standard rig capable of drilling to 2,000 feet.

Two hundred and seventy-five feet of 8-inch pipe and 510 feet of 6-inch pipe were used. On account of the material encountered, which caved badly, the average daily progress was only 7 feet. The total cost of the well was ₱7,498.61.

At the close of the fiscal year the well outfit was being overhauled at Iloilo while awaiting transportation to Cebu, where the next project was to be undertaken for that municipality.

The following wells were drilled during the fiscal year :

Location.	Province.	Depth.	Cost.	Cost.
		<i>Feet.</i>		<i>Per foot.</i>
Engineer Island.....	Manila.....	582	P4,809.56	P7.40
Experimental station, Singalon farm.....	do.....	607	3,310.09	5.45
Iloilo.....	Iloilo.....	806	7,498.61	9.32

At the end of the fiscal year the secretary of commerce and police had authorized drilling the following artesian wells:

Location.	Province.	Date of authorization.
Cebu.....	Cebu.....	Feb. 20, 1906
Cauit Island.....	do.....	Do.
Billibid prison.....	Manila.....	Jan. 7, 1906
Government laboratories.....	do.....	Feb. 20, 1906
Lingayen.....	Pangasinan.....	Mar. 31, 1906

The outfit was purchased from the Pierce Well Engineering Company of New York. Its principal parts consist of a combined portable 10-horsepower boiler and engine complete, mounted on a steel wagon, a steel derrick, hoisting engine and walking beam also mounted on a wagon, and the necessary drills, tools, accessories, and duplicate parts, and cable 1,000 feet in length. Double extra heavy casing has been used to date.

WATER-POWER DEVELOPMENT.

The various projects relative to water-power development have received but little attention during the past fiscal year. No developments have been started, but many inquiries from interested parties have been made and the desired information furnished.

The lack of definite information on the low-water discharge extending over a period of years and the limited information on reservoir or storage sites in these streams present serious difficulties. Considerable information covering these points is being gradually collected.

No additional information has been collected relative to the development of water power on the Angat and Botocan projects.

Callraya River.—The only work done on this project during the year has been gathering hydrographical data on the watershed. The weather station at San Antonio and the river gauge have been in operation through the year. The following results have been derived.

The rain gauge was established in the Callraya watershed on July 12, 1904, and the rainfall in inches for the ensuing year has been as follows:

Date.	Rainfall.	Run-off in million.	Date.	Rainfall.	Run-off in million.
	<i>Inches.</i>	<i>Cu. ft.</i>		<i>Inches.</i>	<i>Cu. ft.</i>
1904.			1905.		
July 12-31.....	10.480	510.4	January.....	4.080	840.0
August.....	11.090	990.5	February.....	8.140	189.4
September.....	17.160	973.7	March.....	2.670	155.8
October.....	15.570	1,180.0	April.....	10.070	158.0
November.....	16.580	1,381.7	May.....	7.660	937.2
December.....	6.780	623.5	June.....	8.640	846.4
			July 1-11.....	5.830	307.8

The rainfall for the same period at the places indicated has been as follows, and are submitted for the purposes of comparison:

	Rainfall.	Average, year.
	<i>Inches.</i>	<i>Inches.</i>
Manila.....	98.508	76.5
Atimonan.....	98.746	104.0
Callraya.....	119.75	-----

A run-off of 300,000 cubic feet per month is required for the development of 10,000 G. H. P. During February, March, and April, to deliver 10,000 G. H. P. there was a total deficiency of 503,000,000 cubic feet of water. This would require a storage of about 550,000,000 cubic feet. Without storage the river could have developed during February, March, and April from 4,000 to 5,000 G. H. P.

Agno River.—Investigations of the water-power possibilities of the Agno River have been continued during December, 1904, and July, 1905, by Mr. H. F. Labelle, assistant engineer, who reports that the lower Agno, in southern Benguet, offers several sites for hydraulic development, the aggregate amounting to some 20,000 horsepower.

There are two sites on this part of the river, within about 4 miles, which combined can give 17,000 G. H. P. The most important is located 25 miles southeast of Baguio; here a development of 10,000 G. H. P. can be effected. The other is located 4 miles farther south and can produce 7,000 G. H. P. Smaller amounts of power could be developed at several other points on this part of the river, but at a greater relative cost.

At Dalapirip, 12 miles southeast of Baguio, about 1,300 G. H. P. can be developed, but only at a high cost.

The upper Agno also has possibilities for water-power sites in many places, but the quantities of power at each individual site is in most cases small. One of the most feasible localities is the site at Aduay, where a series of rapids are encountered.

MISCELLANEOUS COMMITTEES.

Cebu burnt area.—By resolution of the Commission dated March 21, 1905, a committee, composed of the consulting engineer to the Commission, the supervisor of the province of Cebu, the provincial fiscal of Cebu, and the president of the municipality of Cebu, was appointed "for the purpose of investigating and recommending to the Commission a definite plan for the widening of such streets as may be desirable and proper and the adjustment of all questions of ownership of land concerned."

This question had previously been taken up by a resolution of the Commission dated March 16, 1903, after the fire of December, 1902, had occurred. The second and more serious fire occurred in the early part of 1905.

A public meeting was held by the committee in Cebu April 7, 1905, for a discussion of the question with the interested landowners. A preliminary agreement between the owners and the committee was drawn up for signature.

Surveys of the burnt district were started March 22, and at the end of the fiscal year surveys and maps had nearly been completed.

The work, briefly, has consisted in surveying the entire burnt area, drawing up detailed descriptions of the existing areas involved, and in making plans for the widening and straightening of streets in the burnt area by an allotment of new plots of land of equivalent value to the property owners whose lands are utilized in part or entirely by the improvements proposed. This plan has been made possible by a gift from the government to the municipality of a portion of the land to be reclaimed by the harbor improvements now in progress at Cebu and all other government land located within the burnt area.

The question has been an extremely difficult one to adjust. Extended surveys were required for the preparation of the necessary legal descriptions, and were it not for the public spirit which the citizens of Cebu have shown, an amicable adjustment of the matter would be impossible. At the end of the fiscal year the report of the committee and its recommendations in the matter were being prepared for transmission to the Commission for action and the necessary legislation.

Oriental Negros; provincial highways.—Under date of March 21, 1905, the secretary of commerce and police directed the consulting engineer to make a report of conditions existing in Dumaguete, Oriental Negros, in reference particularly to provincial road construction.

A general meeting of the provincial board was held on April 3, the consulting engineer presenting the matter of road construction to the board, and a resolution was passed relative to the payment of such portion of the salary of the assistant engineer detailed from the bureau of engineering for this road work as would be covered by the salary authorized for the previous supervisor. The board also appropriated ₱31,000 for road and bridge work, which was practically all the funds available for such purposes under both general and congress-

sional relief funds, and requested that the services of Mr. W. W. Coleman, assistant engineer, be continued until the completion of the work, which was practically accomplished at the end of the fiscal year.

Relief rice—Bohol Province.—Under date of June 17, 1905, the governor-general directed the consulting engineer to proceed to the island of Bohol with a shipment of rice loaned to the province, in accordance with a resolution of the Commission dated June 16, and superintend its proper distribution, expenditure, and utilization.

The conditions of distress existing in Bohol, due to prolonged and severe drought, and a request from 13 municipalities for the loan of rice, to be repaid within one year, caused the request for a loan of 6,000 piculs of rice to be granted. The total appropriation made was ₱20,000, not more than ₱18,000 of which should be utilized in the purchase of rice, and ₱2,000 in cash, loaned without interest, to be expended for materials to be used in public works. It was specified that the rice distributed should be expended for materials and labor on public works and, in extreme cases, gratuitously distributed.

The work proposed consisted of repairs to roads and bridges and the construction of schoolhouses, and it was under prosecution at the end of the fiscal year.

RAILROADS.

The principal work accomplished by this division (Mr. C. H. Kendall, railroad engineer in charge) has been in connection with the duties required by the provisions of Acts Nos. 554 and 703, which provide for the Cabanatuan and Antipolo extensions of the Manila Railway Company (Limited) and the preliminary survey of a railroad across the island of Panay.

The total length of the Cabanatuan extension is 91.5 kilometers, of which 61.5 kilometers had been opened to public use during the fiscal year. About three-fourths of this line has been constructed.

The total length of the Antipolo line is estimated at 40 kilometers, of which 16 kilometers is practically completed, and none open to public use.

A preliminary survey of a railroad location across the island of Panay from Iloilo to Cadiz and the Batan Harbor was authorized by resolution of the Commission dated May 10, 1905. The lack of time and available men prevented a survey of all of the proposed railroad lines, and the Panay line was selected on account of its average typical conditions with respect to population and the variety and extent of agricultural development of the region traversed, the topographical features relative to both mountains, lowlands, and drainage, and also in view of the fact that the fertility of this region presented average possibilities for future development.

The surveys conform to a degree of accuracy and thoroughness somewhat beyond the degrees required for a preliminary location, and the plans will permit a final location except for such alternate routes as may require additional field work.

Special attention is invited to Mr. Kendall's report, attached hereto, which shows interesting details of the operation of the main line and of the construction of the extensions. It also contains a discussion of the survey across the island of Panay, including a comparison of the cost of a standard-gauge system with a narrow gauge.

Considerable work has been accomplished by this division in furnishing available information to prospective bidders on the Philippine railway projects now under advertisement.

PROVINCIAL WORK.

The province of Abra has been consolidated with the province of Ilocos Sur, leaving a total of 39 provinces, comprising 732 municipalities, into which the archipelago is subdivided. Of these the Moro Province is under the military authorities, Benguet and Palawan are not provided with supervisors, the duties of that official being performed by the provincial governors. Of the remaining 36 provinces, the offices of supervisor and treasurer have been consolidated in 17 provinces, 4 consolidations having been accomplished during the past fiscal year. The remaining 19 provinces are provided with supervisors, 3 of which were filled at the close of the fiscal year with acting supervisors on account of absence or vacancies.

The total expenditures in these 36 provinces upon public works for the fiscal year was ₱1,063,887.75, as against ₱1,237,852.41 for the preceding year. The

total insular assistance extended by loan or from the Congressional relief fund to the provinces during the fiscal year was only ₱156,341.48, while for the preceding year it was over ₱600,000. Although the mileage of the constructed and repaired roads has been less than the year previous, the construction and repairs of bridges, culverts, and public buildings has been increased. The following abstract of the principal public works accomplished during the fiscal year 1905 is shown in comparison with similar results for the fiscal year 1904.

	Roads constructed.		Roads repaired.		Bridges and culverts constructed.		Bridges and culverts repaired.	
	Miles.	Cost.	Miles.	Cost.	Number.	Cost.	Number.	Cost.
1904	252.735	₱319,127.65	1,662.563	₱469,930.06	532	₱128,830.10	458	₱43,939.86
1905	114.708	181,780.31	992.240	221,967.63	668	254,261.50	468	39,150.65
Increase or decrease	-138.029	-137,337.34	-670.323	-247,962.43	+76	+125,931.40	+88	-4,789.21

	Buildings constructed.		Buildings repaired.		Total expenditures.
	Number.	Cost.	Number.	Cost.	
1904	143	₱82,125.48	115	₱58,029.58	₱1,237,852.41
1905	154	168,598.18	119	61,323.88	1,063,887.75
Increase or decrease	+6	+84,470.70	+4	+3,294.30	-173,964.66

The typhoon of the 12th and 13th of July, 1904, during which a rainfall of 17.19 inches fell in twenty-seven hours (the highest recorded since the establishment of the observatory in 1867), caused considerable damage in Manila and the provinces. The following is an estimate of the damages caused to public works throughout the provinces:

	Amount.		Amount.
Abra	₱1,500	La Unión	₱3,000
Ambos Camarines	400	Lepanto-Bontoc	1,000
Antique	2,000	Negros Occidental	50,800
Bataan	1,000	Nueva Ecija	500
Batangas	6,150	Pampanga	11,100
Benguet	1,000	Pangasinan	100,000
Bulacán	800	Samar	2,150
Cavite	10,200	Tarlac	3,000
Ilocos Norte	4,000	Zambales	25,000
Ilocos Sur	30,000		
Iloilo	7,000	Total	280,000
Laguna	100		

The internal-revenue law went into operation August 1, 1904. Its regulations materially modified provincial and municipal funds. Of the total revenues derived therefrom 25 per cent is returned to the province, proportional to the respective populations, three-fifths of which, or 15 per cent, is placed to the credit of the municipalities. It has necessarily required time to inaugurate this law, to collect the revenues, and return to the provinces and municipalities their respective portions. As a result, the effect upon public improvements on account of the lack of available funds has been noticeable, and doubtless this condition will continue throughout the present year before receipts and expenditures can be properly adjusted. This condition has been especially noticeable in those provinces where hemp and cocoanuts are the principal products and in which the need of good roads and economical transportation is of special importance in view of the fact that all products are exported and practically all foodstuffs imported. The road funds have also been decreased on account of the requests granted for the suspension of the land tax, from which practically all the provincial road funds are derived. Also, the insular government during 1905 distributed among the provinces a considerable portion of the Congressional relief fund, from which source but few appropriations were available during the fiscal year 1905.

It will be impossible for the insular government to meet the numerous requests for assistance in the construction of provincial and municipal roads and other public improvements. The enactment of an equitable road law whereby the maintenance of the provincial and municipal roads can be assured has long been urged as a necessary and economical measure. The importance of such a law has been pointed out by many provincial officials and its enactment earnestly requested. The necessity of continual maintenance of both new and old roads is appreciated throughout the provinces.

Provisions for the enforcement of such a law under which systematic construction and maintenance of the highways so important to the development of these islands can be effected is desired by a considerable proportion of the people. It is believed that its operations would be acceptable and successful, and its enactment at an early date is recommended.

The municipality is the unit of the insular government; it is empowered with civil liberties far in excess of any heretofore enjoyed; from it must be developed the initiative in the accomplishment of public improvements, provided the anticipated development of the islands is realized. In general, the supervisors have been active in their efforts to arouse and secure interest in municipal improvements. While the results have been encouraging, much remains to be attained. In a few provinces the work accomplished has been very commendable and is worthy of mention.

The municipality of Sorsogón heads the list with appropriations aggregating ₱15,987.17, mainly for improved streets. The municipality of Aparri, Cagayán Province, has made an appropriation of ₱10,800 for a steel bridge. Bulán, Sorsogón Province, has expended ₱8,165.34 for steel bridges, and San Fernando, Pampanga, ₱6,960.56 for improved streets. Ten other municipalities have expended from ₱1,000 to ₱3,000 each, mainly on streets and bridges. Cagayán and CápiZ have accomplished considerable work with voluntary labor. In all, ₱50,417.65 was expended for public works by municipalities under the supervision of the supervisors.

Several municipalities have also requested investigations and estimates of cost of proposed improvements in water supplies, irrigation, bridges, etc., and in general such requests have been granted and the work authorized by the Commission. The supervisor of Cagayán, in reporting upon the work accomplished, states that "Much more work has been done this year than in any previous year under civil government, and it has been accomplished to a very large extent by the voluntary labor given by the people."

In CápiZ Province the supervisor-treasurer, an engineer, states that "The most encouraging thing about road work has been the interest shown by the towns and their willingness to turn out the people to do a certain amount of work."

"In the town of Panitan the people contributed 40 cavans of palay and 2,922 days' work, and cleared and repaired in a satisfactory way about 14 miles of road from CápiZ to Dao line. Many of the other towns of the province have assisted largely in the repair of the roads and construction of timber bridges with voluntary labor. They have taken keen interest in such work to the extent of rivalry with adjoining towns."

In some municipalities systematic maintenance work has been organized, and its success has been apparent in the improved condition of the roads, especially during the rainy months. Worthy of note are the towns of Bulán, Bacón, Gubat, and Sorsogón, which purchased eight Chinese bullocks each, which, with a driver and a gang of laborers to each wagon, are working constantly throughout the year. The valuable work accomplished by this force is not due so much to the expenses incurred, but to the fact that the repairs have been continuous throughout the year.

Efficient maintenance necessitates continuous attention to the drainage and to the daily wear of the surfacing material. A well-organized and properly distributed force of laborers giving daily attention to the small repairs is the most economical way. They should be provided with suitable tools and the necessary material distributed at convenient points. This principle of maintenance is of special importance on the recently constructed roads for the first two or three years after construction, and it should be rigidly enforced, or the money expended in their construction is of slight value. A suitable and complete road constructing and repairing plant, comprising graders, steam rollers, and rock crushers, and increased transportation facilities, is needed practically in every province.

Laws for the protection of the roads and ditches against unreasonable and unnecessary abuses and encroachments would be advisable, and existing laws prohibiting the use of fixed-wheel and narrow-tired carts and sleds should be rigidly enforced.

A tabulation of the expenditures and principal items of work accomplished for the provinces cited is attached hereto.

Annual reports provincial work, fiscal year ending June 30, 1905.

EXPENDITURES.

Province.	Labor.				Materials (various).	Rents, freights, contracts, and other services.	Total.
	Native.		Other than native.				
	Days.	Cost.	Days.	Cost.			
Albay	29,910.0	P10,331.82	262.0	P632.17	P378.65	P12.00	P11,854.64
Ambos Camarines	19,206.5	13,261.13	298.0	1,246.51	3,967.92	4,271.72	22,747.28
Antique	1,670.5	491.96			188.37	11.00	641.33
Bataan	814.5	875.50			94.81	4,018.92	4,984.23
Batangas	61,096.0	28,071.02	91.0	363.74	23,289.28	48,753.10	100,477.14
Bohol	1,429.5	958.68			200.06		1,158.68
Bulacan	61,560.5	28,397.97	233.0	1,945.50	10,988.58	24,232.14	64,914.19
Cagayan	11,579.5	2,600.43	334.5	1,667.50	549.85	21,399.00	26,216.28
Capiz	28,414.5	10,939.77	701.0	2,804.00	1,454.84	7,323.28	22,521.89
Cavite	58,826.5	29,409.84	717.0	8,896.11	4,752.75	25,182.79	62,740.99
Cebu	85,733.5	19,081.85	1,631.5	8,063.16	5,947.27	12,460.16	45,572.44
Ilocos Norte	38,709.0	16,817.75			2,424.35	4,548.30	23,790.40
Ilocos Sur	47,605.85	22,089.47	92.0	588.08	14,404.64	2,662.91	89,745.10
Iloilo	31,392.5	14,248.78	434.0	1,986.00	24,668.78	2,535.50	43,889.06
Isabela	8,410.4	8,899.19	91.0	424.00	1,430.16	23.05	10,776.40
La Laguna	17,958.0	7,922.82	141.0	705.00	12,405.90	841.22	21,874.94
La Unión	13,030.8	8,664.10	92.5	811.50	4,418.48	579.56	18,973.64
Lepanto-Bontoc	33,279.3	5,198.97	393.0	2,346.00	1,426.31	147.34	9,118.62
Leyte	19,917.2	5,298.19	1,068.5	4,421.33	13,880.38	48,083.18	71,633.08
Masbate	1,192.75	939.33			52.24	58.50	1,045.07
Mindoro	10,712.5	6,586.01	94.0	343.00	20.46		6,949.47
Misamis	16,060.25	8,094.95	50.0	250.00	3,225.24		11,570.19
Negros Occidental	26,582.0	14,919.72	48.0	240.00	6,491.54	2,910.93	24,562.19
Negros Oriental	21,798.0	9,889.58	415.75	2,044.25	6,278.06	18,818.05	86,529.94
Nueva Ecija	20,567.5	15,074.56	344.0	1,138.25	10,954.77	228.63	27,396.21
Nueva Vizcaya	4,852.0	2,995.85	112.0	485.00	25.00	28.00	8,533.85
Pampanga	47,114.0	24,782.52	399.5	1,893.75	13,790.66	2,331.92	42,798.85
Pangasinan	36,633.5	20,117.49	1,814.0	6,438.92	28,966.39	31,494.63	87,017.43
Rizal	9,170.15	5,954.59	8.0	40.00	9,907.12	5,139.00	21,040.71
Romblon	6,584.0	3,488.72	70.5	198.50	143.46		8,380.68
Samar	43,498.0	30,118.18	1,122.0	4,478.45	3,144.74	95.50	37,836.87
Sorsogon	26,860.6	25,152.45	1,006.0	5,562.19	38,768.00	5,233.39	74,716.03
Surigao	5,030.5	2,714.82	45.0	160.00	268.93	98.81	3,242.56
Tarlac	15,484.0	11,527.97			7,944.41	1,322.00	20,794.38
Tayabas	44,207.5	27,486.11	974.0	5,599.25	12,125.66	6,757.45	51,968.47
Zambales	18,198.0	7,447.21			3,325.42	651.89	11,424.52
Total	870,014.8	450,848.75	13,061.75	59,142.16	272,202.97	241,693.87	1,063,887.75

WORK ACCOMPLISHED.

Province.	Roads.				Bridges and culverts.			
	Constructed.		Repaired.		Constructed.		Repaired.	
	Miles.	Cost.	Miles.	Cost.	No.	Cost.	No.	Cost.
Albay			12.420	P10,576.32			2	P296.40
Ambos Camarines			5.950	7,398.08	4	P5,372.87	25	1,896.24
Antique	2.500	P121.62	.270	43.10	2	133.62	2	191.69
Bataan .....			.800	84.00	8	4,364.52	11	420.00
Batangas	1.079	6,298.60	52.969	12,342.11	37	32,524.34	14	1,471.25
Bohol			16.500	210.25	1	103.65	18	443.78
Bulacan	8.273	33,598.56	11.500	295.67	9	1,373.07	2	286.25
Cagayan	6.378	890.88	33.962	3,212.38	39	21,187.00	11	108.50
Capiz	4.250	2,165.26	59.000	12,915.12	80	4,693.64	50	1,665.26
Cavite	1.387	1,979.38	17.940	27,192.92	43	2,903.75	51	4,104.29
Cebu	3.052	19,491.96	36.790	4,723.94	5	365.94	3	407.00
Ilocos Norte			58.767	13,331.97	16	2,756.88	16	1,168.45
Ilocos Sur	5.068	4,296.04	1.298	1,697.63	18	6,561.40	33	1,978.66
Iloilo			34.689	21,080.48	27	11,464.68	7	2,494.76

NOTE.—No reports on public works are received from Benguet, Moro, and Palawan provinces. Abra province consolidated with province of Ilocos Sur, April 1, 1905.

Annual reports provincial work, fiscal year ending June 30, 1905—Continued.

WORK ACCOMPLISHED—Continued.

Province.	Roads.				Bridges and culverts.			
	Constructed.		Repaired.		Constructed.		Repaired.	
	Miles.	Cost.	Miles.	Cost.	No.	Cost.	No.	Cost.
Isabela.....	1.000	P352.62	85.521	P1,393.28	36	P7,606.62	4	P1,150.23
La Laguna.....			21.000	3,310.25	6	3,440.80	12	4,458.14
La Unión.....	3.390	7,533.95	5.330	888.54	3	1,623.17	9	1,738.99
Lepanto-Bontoc.....	18.530	3,701.32	12.640	2,297.66	2	697.70		
Leyte.....	7.983	14,275.94	70.434	3,920.00	9	28,491.55	10	777.20
Masbate.....			4.600	369.78	15	669.39		
Mindoro.....								
Misamis.....	9.119	2,856.92	18.722	3,051.98	28	3,963.83	8	1,064.66
Negros Occidental.....	2.909	3,186.70	7.966	3,838.70	6	7,653.41	6	254.30
Negros Oriental.....	7.020	18,883.96	4.243	803.45	28	15,486.07	6	251.35
Nueva Ecija.....	1.271	2,614.47	17.787	3,511.79	20	5,165.46	20	1,264.54
Nueva Vizcaya.....			3.250	521.85				
Pampanga.....	6.278	26,748.79	6.249	2,070.23	22	4,354.67	6	775.61
Pangasinán.....	2.100	5,787.39	56.080	16,647.72	45	13,197.15	62	2,117.85
Rizal.....	4.800	7,288.08	42.000	10,639.50	42	1,707.60	17	820.05
Romblón.....			57.600	2,609.25				
Samar.....	12.151	15,817.04	71.600	6,386.08	6	2,103.55		645.07
Sorsogón.....			4.259	7,212.10	13	41,853.35	5	207.55
Surigao.....	4.150	559.48	4.000	714.36				
Tarlac.....	1.198	1,230.00	92.250	6,707.50	24	2,966.86	39	3,587.72
Tayabas.....			29.529	28,432.62	23	14,216.46	28	3,026.58
Zambales.....	1.820	2,111.80	36.825	1,047.17	41	5,069.56	18	1,060.38
Total.....	114.706	181,790.31	992.240	221,967.63	658	254,261.50	496	39,150.65

Province.	Buildings.				Surveys.		Equip-ment (va-rious).	Miscella-neous.	Total.
	Constructed.		Repaired.		No.	Cost.			
	No.	Cost.	No.	Cost.					
Albay	1	P69.00	3	P261.25			P151.67		P11,354.64
Ambos Camarines	23	4,808.65	4	2,004.07			510.20	P1,267.67	22,747.28
Antique			1	96.30			55.00		641.83
Bataan			2	112.71			3.00		4,964.23
Batangas	24	43,167.50	16	2,326.49			1,011.12	1,835.73	100,477.14
Bohol			2	211.00			26.00	164.00	1,168.68
Bulacán	2	18,696.48	1	15.63	1	P7.60	809.60	9,982.88	64,914.19
Cagayán	1	286.50	3	345.45			50.00	140.87	28,216.28
Cápiz			2	854.00			725.61		22,621.89
Cavite	44	21,914.21	12	2,294.72			2,339.92	11.25	62,740.99
Cebu	9	12,077.86	3	7,376.22	2	518.96	610.56		45,872.44
Ilocos Norte	16	3,590.00	4	2,852.55			590.55		23,790.40
Ilocos Sur	2	22,832.65	5	1,417.71			982.11		39,745.10
Iloilo			2	2,174.85	2	280.55	4,685.14	1,258.60	43,899.06
Isabela	1	150.35	2	88.80			34.50		10,776.40
La Laguna			3	7,681.24			2,984.51		21,874.94
La Unión			2	995.98			1,193.01		13,973.64
Lepanto-Bontoc	1	2,247.68	2	174.26					9,118.62
Leyte	3	7,120.77	4	646.40	14	6.00	12,102.54	4,292.68	71,633.06
Masbate			1	5.40					1,045.07
Mindoro								6,949.47	6,949.47
Misamis			2	462.35			150.50		11,570.19
Negros Occidental	11	5,932.95	1	282.49			3,382.37	31.27	24,562.19
Negros Oriental	1	46.88	1	196.90			811.33	50.00	36,529.94
Nueva Ecija	4	12,002.96	6	1,104.37	1	66.35	1,295.04	371.23	27,396.21
Nueva Vizcaya								1,392.30	3,533.85
Pampanga	5	1,319.20	3	508.78	5	390.87	4,656.38	1,977.42	42,798.85
Pangasinán	3	5,690.37	4	14,834.08	34	14,048.00	11,535.67	3,159.20	87,017.43
Rizal			2	110.07			116.01	859.40	21,040.71
Romblón	1	13.00	7	1,208.43					3,830.68
Samar			5	1,965.94	3	1,759.76	7,549.54	1,109.39	87,836.87
Sorsogón	1	2,062.54	1	177.65			8,081.13	15,621.71	74,716.03
Surigao	1	1,047.93	6	253.85					3,242.56
Tarlac			3	6,256.30				46.00	20,794.38
Tayabas			5	3,032.64			3,260.17		51,968.47
Zambales								2,115.61	11,424.62
Total	154	166,596.18	119	61,323.88	62	17,028.09	69,683.18	52,086.33	1,063,887.75

ORGANIZATION AND PERSONNEL.

While the organization of divisions within the bureau has not been changed during the fiscal year, it has been subject to several modifications. Mr. J. D. Fauntleroy, the chief of supervisors, was transferred to the bureau of public health as sanitary engineer. Mr. J. G. Holcombe, principal assistant engineer, and Mr. A. H. Higley, chief surveyor, both resigned early in the year while on leave of absence in the States. These positions have not been filled; the duties have been provided for by the detail of employees from lower grades.

The authorized personnel at the close of the fiscal year was a consulting engineer, a principal assistant engineer, a railroad engineer, a chief of supervisors, a chief surveyor; 1 assistant engineer, class 4; 3 assistant engineers, class 5; 1 chief draftsman, class 5; 5 assistant engineers, class 6; 1 chief clerk, class 6; 9 assistant engineers, class 7; 1 clerk, class 7; 4 clerks, class 8; 7 transit men, class 8; 4 clerks, class 9; 8 transit men, class 9; 4 junior draftsmen, class G; 3 junior draftsmen, class I; 4 survey men, class I; 10 survey men, at \$210 per annum, and 2 messengers, at \$210 per annum—a total of 72 employees, of whom 45 are technical and 27 nontechnical men. Additional to the above force a number of temporary employees have been engaged mainly on public works, whose aggregate salaries during the year amounted to ₱16,000.

The different roads being constructed from insular funds under direction of this bureau required 12 superintendents, of whom 7 are provincial supervisors; 82 foremen, including bridge carpenters and blacksmiths; 23 clerks, and about 8,000 native laborers.

To provide for the better efficiency of the service it has been the policy of the bureau to designate an employee in each division to familiarize himself with the working details of the division, in order that he could assume the duties of his chief, in view of the frequent changes in the service resulting from resignations or absence on accrued leave.

The following tabulation shows the changes which have occurred in the personnel. It shows, including 31 promotions, an aggregate of 62 separations and 68 new appointments in a total force of 75:

	Technical Ameri- cans.	Nontechnical.		Total.
		Ameri- cans.	Fili- pinos.	
Number employed June 30, 1904.....	28	26	15	69
Permanent appointments.....	6	6	4	16+
Temporary appointments.....	0	31	16	47+
Resignations.....	5	23	9	42-
Transfers from bureau.....	13	6	0	18-
Transfers to bureau.....	4	0	1	5+
Removals.....	0	1	1	2-
Number employed June 30, 1905 (including 2 reappoint- ments).....	20	29	26	75

A reduction was made in the estimated expenditures for salaries and wages, owing to the increased efficiency of Filipino clerks, who have been of valuable assistance in the lines of work to which they have been assigned, and to the discontinuance of several positions above class 10.

The following statistics concerning the employees of this bureau for the past fiscal year are suggestive of the provisions that must be made to provide for routine duties on account of authorized absences due to annual vacation and accrued leave:

	Technical American.	Nontechnical.	
		American.	Filipino.
Total annual vacation allowable (days).....	812.0	306.0	210.0
Total annual vacation leave taken (days).....	374.0	171.0	111.0
Percentage of annual vacation leave taken.....	46.1	55.8	52.9
Number of men entitled to annual vacation leave.....	29.0	12.0	10.0
Number taking part of annual vacation leave.....	17.0	10.0	6.0
Number taking all of annual vacation leave.....	3.0	.....	1.0
Number taking no part of annual vacation leave.....	9.0	2.0	3.0
Percentage of vacation leave due to sickness.....	8.0	9.0	7.0
Total accrued leave taken (days).....	306.0	6.0	3.0
Percentage of all vacations to the total time of employees.....	8.8	4.6	3.7

The total amount of overtime work in the Manila office, without compensation, was 4,813.5 hours, or nearly 700 days of 7 hours each. No records of overtime work by the field parties have been attempted.

It will be noted that about 50 per cent of the annual vacation leave has been taken, a small percentage of which has been due to sickness. The primary purpose of this leave is to attain to an increase in the efficiency of the employees on account of increased healthfulness and activity. A failure to utilize this advantage, together with considerable overtime work on the part of some of the employees, tends to a decrease in the efficiency of the force. Tending to produce the same effect are the numerous changes in the personnel, which are altogether too large for economy and efficiency in any organization.

As a necessity arising from these frequent changes in the working force, too large a percentage of the time of older and more experienced employees is required in instructing new men regarding their duties and in routine details, which might be done by men of lower grades.

It is probable that an increase in salaries for the responsible positions, and an increase in the employment of efficient and trained Filipino employees will tend to decrease the conditions cited.

Financial statement, bureau of engineering, for fiscal year ending June 30, 1905.

	Salaries and wages.	Additional expenses.	Public works.	Contingent expenses.
Appropriations:				
Act No. 1225.....	P148,000.00	P10,000.00	P40,000.00	P14,000.00
Act No. 1361.....			11,000.00	1,500.00
Act No. 1361.....	* 19,000.00		19,000.00	
Total.....	129,000.00	10,000.00	70,000.00	15,500.00
Expenditures.....	127,422.57	7,110.65	54,549.26	15,417.75
	1,577.43	2,889.35	15,450.74	82.25
Outstanding obligations.....	293.32		443.53	8.39
Balances.....	1,284.11	2,889.35	15,007.21	73.86

* Transferred to public works.

TOTAL EXPENDITURES.

Salaries and wages.....	P127,715.89
Additional salaries.....	7,110.00
Public works.....	54,992.79
Contingent expenses.....	15,426.14
Total, bureau of engineering.....	205,244.82

Santa Potenciana building appropriations for fiscal year ending June 30, 1905.

	Salaries and wages.	Contingent expenses.
Act No. 1225.....	P5,000.00	P4,500.00
Expenditures.....	4,431.83	2,955.51
Balances.....	568.67	1,544.49

INCLOSURES.

The following inclosures accompany this report and form a part thereof:

- (1) A descriptive report by Mr. J. D. Fauntleroy, formerly chief of supervisors, on existing irrigation works constructed by the non-Christian Igorrotes;
- (2) A diagram showing information on various wells drilled in the islands; *
- (3) Report of the railroad engineer, including the report on surveys for a railroad across the island of Panay.

Respectfully submitted.

J. W. BEARDSLEY,
Consulting Engineer to the Commission.

The SECRETARY OF COMMERCE AND POLICE,
Manila, P. I.

* The diagram above referred to is on file in the Bureau of Insular Affairs.

REPORT ON IRRIGATION IN NUEVA VIZCAYA BY CHIEF OF SUPERVISORS.

MANILA, P. I., December 17, 1904.

SIR: I have the honor to render the following report on irrigation as I have seen it practiced in Nueva Vizcaya:

BY THE CHRISTIAN POPULATION.

In the valley of the Magat River practically all the rice land under cultivation between Bayombong and Bagabag (15 miles) is irrigated from a canal built many years ago.

This canal starts from the Magat River at a point about 3 miles south of Bayombong and runs north to near Bagabag, where, I understand, it is allowed to join the river again.

Fig. 1.

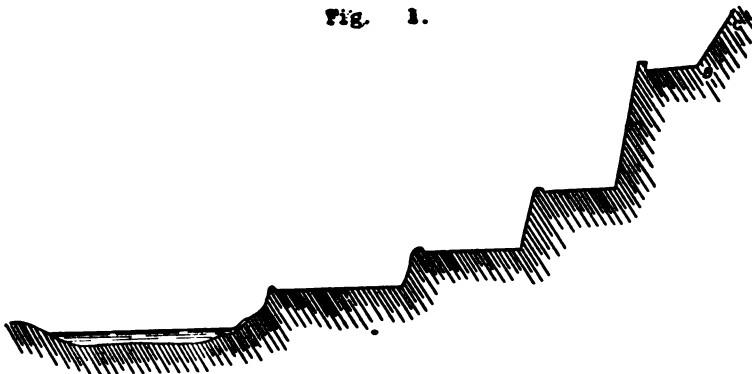
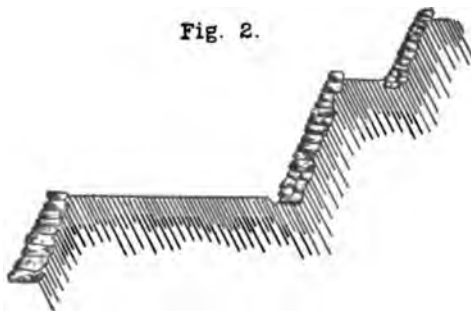


Fig. 2.



Its dimensions are apparently 25 feet wide by 2 feet deep, and the fall is not sufficient to cause a current of over 2 miles an hour.

I understand that it was constructed many years ago under the direction of Spanish priests.

BY THE IGORROTES.

From a point 3 miles east of Quianŕgan to Sapao (via Bonaue) the land is terraced in a very thorough manner. These terraces begin in the valleys and rise, one above another, to as high a point as water can be secured. In some instances the altitude of the top terrace must be over 1,000 feet above the valley below it, whereas the height of the terrace at the foot of the slope is comparatively small in comparison to the width of the paddy. A change takes place with each succeeding terrace, until the top terraces are frequently higher than their respective paddies are broad. (See Fig. 1.)

Terraces of 10 feet high are common, of 15 feet are frequent, of 20 feet are not rare, and I saw one which must have been at least 30 feet high. The material used in making these terraces is generally the earth composing the natural soil. As the water from the paddies soaks into the ground the soil is turned into mud and loses its consistence, so that frequently greater pressure is brought to bear than the terrace, acting as a retaining wall, can support, and a slide is the result.

The gaps so caused in the terraces are replaced with great patience by the Igorrotes, and the face of the new terrace is generally revetted with large stones, so that in the older districts, like Bonaue and Sapao, there remain very few terraces that are not stone-faced. (See fig. 2.) Some of these stones are 2 by 2 by 4 feet, and I would like to find out what device was utilized in getting them into place.

Fig. 3.

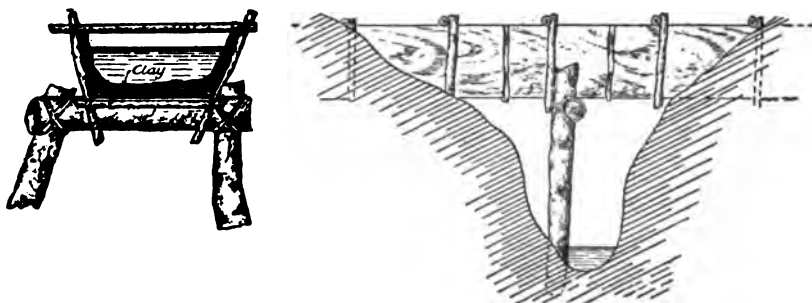
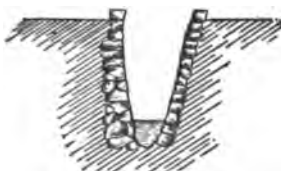


Fig. 4.



SOURCES OF WATER.

The water is obtained in every case by diverting a small stream where the altitude is equal to or higher than that of the land it is proposed to irrigate. This diverted stream is then carried in a ditch on a level, or nearly so, until the top terrace is reached. There is sometimes a series of ditches, whereby the water can be turned on or off any particular paddy.

When the whole series of paddies are covered with water the mouth of the irrigation ditch is dammed up.

Sometimes a stream is diverted in a gorge or ravine whose sides are too steep for terraces, and the irrigation ditch in this case winds around the hills and pours its water on paddies quite distant from its source and most probably out of sight of it. The trail between Quiangán and Bonaue keeps in sight of such a ditch for nearly 2 miles.

Sometimes water for a newly irrigated field is carried across the irrigation ditch of an older field, and in such cases a water-tight aqueduct is made of hollow trees. I saw one 18 inches deep, 30 inches wide, and 10 feet long made out of sections of hollow trees

fastened together with bejuco, the cracks between the boards being calked with clay and the bottom covered with 3 inches of the same. (See fig. 3.)

When an irrigating ditch passes through a paddy the sides are securely revetted with stone (see fig. 4), and where the paddies are large these sunken ditches are frequent, presumably being placed there to carry off the excess water in case of heavy rains.

CROPS.

On the land irrigated as described above are raised rice (the finest I have seen in the Philippines), potatoes, beans, cabbage, onions, cotton, and a variety of other products. On the land that is too steep for terracing (generally tops of mountains) they raise large crops of camotes.

On those terraces where they build their houses they raise coffee, cocoanuts, betel nuts, bananas, flowers, etc. It is significant that the Igorrotes plant their rice at the time it is generally being harvested elsewhere, viz, during the months of December and January. They use no animals in tilling the soil, all of the work being done by manual labor.

HISTORY OF THE SYSTEM.

The Igorrotes have no idea of time and can give no account of when this system of terracing began. They simply state that it was done by their fathers before them. The work must have been going on for many years, as in many valleys every available foot is terraced and irrigated. It is probable that their ancestors many years ago, fleeing from powerful enemies, sought refuge in these narrow valleys, and, finding themselves secured, remained and eked out a livelihood as best they could. Doubtless they were familiar with rice.

It is probable that the torrential rains of the wet season inflicted as much damage to their crops as did the drought and heat of the dry season, so that gradually the system was evolved of raising crops in the dry season by means of water taken from the neighboring streams, and the system thus begun has continued, each generation building more terraces, the higher terraces costing more labor and yielding less arable ground than the lower ones. We were told by old men that when they were young the terraces only reached a half or a third or a fourth as high as they do now.

They have a sort of water level made of bamboo, which they use in determining the location of their ditches.

They seem to be ignorant of the use of dams for raising the level of water.

I was deeply impressed with the vastness of the works that I saw and filled with admiration for the people who had worked so long and patiently and with such poor implements to construct them, but I could not help thinking that the same amount of work done under the intelligent supervision of an engineer in one of the many wide and fertile valleys of Nueva Vizcaya, at present unoccupied, would have irrigated 10 or 20 acres where now they have but 1.

The works above described are constructed and operated by the non-Christian Igorrotes.

Very respectfully,

J. D. FAUNTLEROY,
Chief of Supervisors.

MR. J. W. BEARDSLEY,
Consulting Engineer to the Commission, Manila, P. I.

ANNUAL REPORT, DIVISION OF RAILWAYS.

SIR: I have the honor to submit the following report of the division of railways, bureau of engineering, for the fiscal year ending June 30, 1905:

No franchises or concessions for extensions or new construction were authorized by the Commission during the year. The few petitions received were deferred pending the general act for the construction of railways in the Philippines. Construction work has progressed rapidly upon the Cabanatuan and Antipolo extensions of the Manila Railway Company [Limited], as authorized under Acts Nos. 554 and 703, respectively, and the Daet-Mercedes tram line, authorized by Act No. 1111, has been constructed and opened.

Fourteen inspection trips have been made for the inspection of completed permanent way, structures, and equipment, the examination of proposed routes of surveys, and the inspection of sinking of steel cylinders and erection of bridges. The opening to the public of four sections—44 kilometers, from Baliuag to Gapán—of the Cabanatuan extension has been granted and the operation approved of the 6.5 kilometers of tram at Daet.

Maps have been prepared in the bureau showing the agricultural products and mineral resources of all the provinces, the municipal boundaries, and the density of population.

These maps were compiled from authoritative information furnished by provincial officials and corroborated by outside commercial information, and are very reliable for ascertaining probable traffic and revenue for proposed lines.

The preliminary survey across the island of Panay has been completed and the maps, data, estimate, and detailed studies for a railway location are submitted as a part of this report.

The following statement in regard to the traffic and business of the railroad and extensions now in operation and what has been accomplished during the past fiscal year is submitted.

Statement of the traffic of the Manila and Dagupan Railway Company for the calendar year 1904.

Total revenue.....	₱ 1,475,969.99
Being a decrease from 1903 of.....	111,884.94
Working expenses.....	660,724.39
Being a decrease from 1903 of.....	32,282.74
Total passenger revenue.....	881,326.16
Revenue for passenger traffic per train kilometer.....	2.11
Passenger revenue per kilometer of road.....	4,491.46
Total freight revenue.....	460,903.69
Revenue per freight train kilometer.....	2.38
Freights earnings per kilometer of road.....	2,351.55
Average amount received per passenger.....	.66
Average amount received per ton freight.....	3.14
Receipts per train per kilometer.....	2.41
Expenses per train per kilometer.....	1.08

Percentage of working expenses to gross receipts, 44.76.

The year has shown a marked decrease in passenger traffic, attributed to the withdrawal of Mexican currency from circulation and the small amount of money distributed among the masses that travel third class, which is about 95 per cent of the passenger traffic. The remarkable increase in freight traffic is encouraging. It has equaled the traffic of 1897, the banner year of the road.

The equipment consists of 34 engines, 116 coaches (various), 600 freight cars and wagons (various).

The number of accidents during 1904 were 18 class A (serious), 12 class B (not serious), and 32 class C (minor). No real loss of life resulted in class A.

The revenue from traffic for the first half of 1905, from January 1 to June 30, 1905, over the main line has been as follows:

Receipts.

Passengers.....	₱ 486,715.11
Express freight.....	53,271.05
Ordinary freight.....	410,678.50
Military transport.....	38,835.96
Various.....	4,989.40
Stotsenberg branch.....	8,708.22
Cabanatuan extension.....	77,633.36

Total for six months..... 1,080,831.60

The passenger receipts show an increase over the corresponding six months of 1904 of 2.5 per cent, the express freight an increase of 27.8 per cent, and the ordinary freight an increase of 55.3 per cent, while in the military transport there is a decrease of 26.2 per cent and in the various and unclassified receipts a decrease of 48.8 per cent. In the receipts for the Stotsenberg branch there is a decrease of 16.2 per cent over the last six months of 1904.

MAIN LINE, MANILA-DAGUPAN.

[196 kilometers.]

The improvements of the main line have been the grading for a double track from Manila terminal to Caloocan, 5½ kilometers, about 20,000 cubic meters of material being added to the present embankment, and the renewal and construction of 150 meters of trestle-work, mostly in Tárlac Province, to provide for the flood flows of the rivers.

In July the through traffic was suspended in the vicinity of Tárlac for thirteen days, due to excessive rainfalls and subsequent overflow of the Rio Grande. A record of 17.19 inches fell in twenty-seven hours. The loss from traffic due to this break was about ₱ 20,000 and the cost of repairs about ₱ 15,000.

CABANATÚAN EXTENSION.

[91.5 kilometers.]

The first two sections of 17.5 kilometers were opened during the preceding fiscal year. Other sections as completed have been opened as follows:

Section.	Kilometers.	Terminal points.	Date.
Third.....	17.5 to 33.0..	Baliuag-San Ildefonso.....	Oct. 3, 1904
Fourth.....	33.0 to 42.5..	San Ildefonso-San Miguel.....	Dec. 9, 1904
Fifth.....	42.5 to 53.0..	San Miguel-San Roque.....	Mar. 20, 1905
Sixth.....	53.0 to 61.5..	San Roque-Gapán.....	Apr. 28, 1905
Seventh.....	61.5 to 70.4..	Gapán-Peñaranda.....	July 24, 1905

Fifteen permanent masonry and steel bridges have been erected on this line to replace the provisional bridges, the most important one being across the Quinigua River and consists of four 100-foot steel spans on piers of 6-foot cast iron cylinders sunk in pairs to good, firm foundation at depth of 43 to 50 feet and filled with concrete about piles driven within the cylinders.

Rails are laid to the 75-kilometer point and grading completed to Santa Rosa. At Peñaranda a long provisional pile trestle is being constructed across the Río Chico.

This river is subject to rapid rise and carries considerable driftwood, and frequently shifts its channel over its broad sandy bed, which is about half a mile wide.

ANTIPOLO EXTENSION.

[40 kilometers.]

Sixteen kilometers of this line to Pasig is nearing completion. Track is laid, culverts constructed, and construction trains are cleaning cuts, widening embankments, and surfacing. Cylinder piers, similar to the Quinigua construction for the four 66-foot steel spans across the San Juan River, are in place and cylinders are being placed for the six 100-foot steel spans across the Mariquina River. About 9 kilometers of grading is completed beyond Pasig to Mariquina and Taytay. Difficulty is being experienced in finding location over about 2 miles of very rugged and unfavorable country near Antipolo.

DAET-MERCEDES TRAMWAY, AMBOS CAMARINES.

The franchise for this tramway of 3-foot gauge along the highway from Daet to the port at Mercedes was granted by Act No. 1111, April, 1904.

This tram has been completed and was opened February 1. It is about 4½ miles long and is operated by animal power. Hemp, the principal freight, is transported at 50 cents per picul and passengers at 20 cents each. Two passenger cars are in operation each way daily, and carry from 100 to 175 people.

ILOILO-CÁPIZ RAILWAY SURVEY.

This preliminary survey for a railway route across the island of Panay from Iloilo to Cápiz and to Batán was authorized in May, 1904, and field work under charge of Mr. F. D. Hayden, assistant engineer, was begun at Cápiz July 18 and completed December 7, 1904.

The report upon this project, detailed fully in regard to description of territory, reconnaissance, traffic possibilities, topography and hydrography, location selected, construction and engineering features, and estimated cost, accompanied by 30 tabulations, abstracts, and plans, with the projected location and profile mapped to scale of 100 and 400 feet to the inch, respectively, is incorporated in this report as a separate exhibit.

The length of the whole system is 111 miles, the main line, from Iloilo to Batán, being 80 miles.

The estimate for the whole system constructed first class and standard gauge, with permanent structures is \$3,428,894 United States, or an average of \$30,910 per mile, without equipment. Including complete equipment for existing traffic the estimate is \$4,045,594, or \$36,470 per mile.

The waterways to be crossed are numerous, and many require long and expensive structures. The item for bridges amounts to \$1,307,275, or an average of \$11,274 per mile. By substituting temporary structures for the permanent bridges the estimate as above may be reduced by about \$500,000.



EFFECT OF HIGH WATER, QUINGUA RIVER, CABANATUAN EXTENSION.



NEW QUINGUA BRIDGE. FOUR 100-FOOT SPANS, CABANATUAN EXTENSION.



METHOD OF DRAINAGE THROUGH CUTS, CABANATUAN EXTENSION.



DAILY SCENE AT MANILA FREIGHT YARD.



TYPE OF WAYSIDE STATIONS.

The total population of the 33 towns through which the proposed lines are located is 181,000. A conservative estimate, based upon the exports and imports and local business, as compared with the traffic of the operated line on Luzón, gives assurance of a net revenue of at least 5 per cent upon the cost of construction at the beginning of operation, and nowhere in the islands is the future growth and development of traffic more promising.

Since the invitation for bids for concessionary contracts for construction of railways in the islands has a provision which states that "all tracks of all the said lines of railway shall be of the gauge of 3 feet 6 inches unless otherwise awarded," an estimate has been made for the cost of a narrow-gauge road for the above project, and is here given in comparison with the estimate for the standard gauge.

Comparison of estimated cost of 3 feet 6-inch and standard gauges, Iloilo-Cápiz-Batán Railway survey.

Item.	Reduction.	Estimated cost.	
		4 feet 8½-inch gauge.	3 feet 6-inch gauge.
	<i>Per cent.</i>		
Right of way.....	(a)	\$45,287	\$45,287
Grading.....	6.89	782,407	728,499
Bridges and culverts.....	14.7	1,307,275	1,115,106
Track and ballast.....	15.41	991,836	838,994
Station buildings.....	(c)	144,100	144,100
Water tanks.....	b 20.00	15,500	12,400
Coaling stations.....	b 20.00	18,400	14,720
Engine houses and shops.....	b 20.00	80,000	64,000
Equipment.....	b 20.00	616,700	492,525
Signal and telegraph systems.....	(a)	44,089	44,089
		4,045,594	3,490,720

a None.

b Assumed.

Or a reduction on the whole of 14.23 per cent.

The percentage reduction in bridges and culverts is not very large owing to the large proportion of culverts as compared to bridges. The cost of culverts for the narrow gauge is decreased only 5.3 per cent, while the cost of bridges is reduced 21.2 per cent. The combined percentage reduction is 14.7 per cent.

The cost of the survey was \$5,263.95, or less than \$50 per mile, which is below the average cost for similar class of surveys in the Tropics, and it compares favorably with the cost of surveys in the States which are often cited as examples of economy and organization. Special credit is due Mr. Hayden and his assistants for their thorough field and office work and the completeness of the investigations, estimates, and maps.

In connection with the granting of the concessionary contracts for the construction of the proposed railroads for the islands, there will arise the necessity of instructions and rules of guidance for:

I. Preparation and submittal of the reports, surveys, plans and profiles, and other data and information for approval and consideration by the governor-general or qualified representative.

II. Instructions and rules to be observed for the governmental inspection and opening of a railway.

III. General base tariffs. Rules and regulations governing the operation of railways.

IV. Instructions and forms required for making the annual administrative report of the operation and business of the railways.

These rules should be carefully prepared and adaptable to the particular requirements of transportation in the islands, and should be equitable to the railway and traveling public alike. The work along this line has been confined to the existing franchises.

Respectfully submitted.

CHAS. H. KENDALL,
Railroad Engineer.

Mr. J. W. BEARDSLEY,
Consulting Engineer to the Commission, Manila, P. I.

PRELIMINARY SURVEY, ILOILO-CÁPIZ-BATÁN RAILWAY, ISLAND OF PANAY.

MANILA, P. I., July 3, 1905.

SIR: I have the honor to submit the following report on the preliminary railway survey from Iloilo to Cápiiz and Batán, on the island of Panay:

AUTHORITY AND ORDERS.

This survey was authorized by an act of the Philippine Commission, as per the following excerpt from the minutes of the Philippine Commission of May 10, 1904:

"The president presented a communication from the consulting engineer to the Commission, requesting authority for the survey of a railroad route from Iloilo to Cápiiz and Batán, island of Panay, upon the completion of the friar land surveys, and stating that the expenditures would be chargeable against the appropriations made for public works, bureau of engineering.

"After consideration by the Commission, on motion, it was *"Resolved,"* That the consulting engineer to the Commission be, and he is hereby, authorized and directed to make the survey of a railroad route from Iloilo to Cápiiz and Batán, island of Panay, upon the completion of the friar land surveys, the expenditures for the same to be a proper charge against the appropriation made for public works, bureau of engineering."

The following orders were received July 10, 1904:

"SIR: You are hereby directed to proceed to Cápiiz in charge of party of four Americans, two Filipinos, a cook, and all necessary equipment and supplies for the purpose of making a preliminary railroad location from Iloilo to Cápiiz and Batán. Mr. C. H. Kendall will have general supervision of the survey, and will furnish you detailed instructions regarding methods of field work, report, etc.

"Subsistence and all necessary traveling and field expenses for yourself and party will be allowed upon presentation of properly certified and approved vouchers.

"Very respectfully,

"J. W. BEARDSLEY,

"Consulting Engineer to the Commission"

"Mr. F. D. HAYDEN,

"Assistant Engineer, Present."

In conformity with the above orders the party left Manila for Cápiiz on July 11, 1904. The calendar is as follows: July 11, left Manila; July 17, arrived in Cápiiz; December 7, completed investigation; December 13, reported in Manila.

The organization of the party and the changes which occurred during the course of the survey are tabulated in Appendix 29.

PROJECT.

(1) The project treated herein is for a railroad in the island of Panay, from the city of Iloilo on the south coast across the island to some point on the north coast having a suitable deep-water harbor.

This report is on the preliminary survey made with the object of ascertaining the most advantageous location, and fixing the northern terminal.

DESCRIPTION OF TERRITORY.

(2) The island of Panay is situated almost exactly in the center of the Philippine group, lying between the parallels of latitude $10^{\circ} 25'$ and $11^{\circ} 50'$ north, and meridians of longitude $121^{\circ} 50'$ and $123^{\circ} 10'$ east of Greenwich.

The topography of the island is defined principally by a range of lofty mountains running north and south near the west coast. Along the north and east coasts there are several groups of mountains which, while not closely associated into high ranges, form lines of relief in the surrounding lowlands. In addition to this, there is a low divide running east and west near the center of the island which serves to divide the drainage into north and south flowing streams.

The principal rivers are the Jalaur, the Panay, and the Aclan.

The Jalaur has its source at Mount Baloy, near the middle of the west coast range, at an elevation of some 5,000 feet, and flows thence for a time as a mountain torrent in an easterly direction and along the south of the island divide. Near the center of the island it turns south, flowing in broad and gently sloping valleys, until it empties into the Iloilo Straits, some 8 miles northeast of Iloilo city.

The Panay also has its source at Mount Baloy, and flows thence easterly along the north of the island divide for some 25 miles, whence it turns northeasterly and finally

north, emptying through numerous mouths partly into Cápiz Bay and partly directly into the Visayas Sea.

The Aclán has its source only a few miles north of Mount Baloy, the source of the other two principal rivers, and flows thence northerly for its entire distance, emptying into the Visayas Sea at Calivo.

Owing to its richness and population, the island of Panay is, next to the islands of Luzon and Mindanao, the most important of the group. It has an area of 4,460 square miles with a population of 775,200. There are three provinces—the province of Iloilo on the south with an area of 1,760 square miles and population of 410,315; the province of Cápiz on the north with an area of 1,750 square miles and a population of 230,720; and the province of Antique on the west with an area of 950 square miles and a population of 134,165.

The principal products are sugar, rice, abacá, copra, tobacco, sapan wood, nipa, and indigo. Coffee is also raised, and rubber and ilang-ilang trees are found. There are in the mountain regions large tracts of valuable woods, such as molave, yacal, teak, narra, ipil, and many others. There are also extensive tracts of uncultivated lands which require but a little attention to produce great wealth.

All the products of a tropical climate can be raised in abundance, and it is largely due to the difficulty of hauling the products to a market that has kept the native from developing the country to a greater extent.

There are no manufactures except the production, in a small way, by individual makers, of the famous just and piña cloth.

No mining operations are carried on, but there are in the province of Cápiz outcrops of coal similar in character to the coal which was formerly mined in Cebú.

RECONNOISSANCE.

(3) A rapid reconnoissance across the island was executed by Mr. C. H. Kendall, railroad engineer, by means of which the controlling points of the proposed route, as well as the northern terminal, were fixed.

Referring to the index map* the route of the proposed railway may be followed from Iloilo, the largest city and principal seaport on the south coast, across the central portion of the island to a deep-water terminal on the north coast. The largest town on the north coast is Cápiz, the capital of Cápiz Province, but unfortunately the harbor of this port is very poor one, it being impossible for vessels of over 10 or 12 feet draft to find good anchorage within a reasonable distance of the town. An excellent harbor is found at Batán, a small town situated on Batán Bay, about 30 miles west of Cápiz. With a reasonable expenditure for docks it is possible to accommodate in this harbor vessels of 24 feet draft, enabling them to tie up to the wharves and load directly from the cars. The town of Cápiz and the territory lying between it and Batán can be served by a branch or shore line joining the main line from Iloilo at the barrio of Bilao, about 11 miles from Batán.

Taking up the main line at Iloilo, the population of which is given as 19,054, according to the census report of 1903, the line strikes 1.9 miles north to La Paz, population 5,724, then 1.3 miles to Jaro, population 10,681. These last two towns, along with several others in the immediate vicinity of Iloilo, have been, since the American occupation, merged into the municipality of Iloilo, so that the population of Iloilo is officially given as 48,492. From Jaro the line continues north 4 miles to Pavia, population 5,700. At Pavia a large amount of business will be secured from the valley of the Buhay River and the towns of San Miguel, population 5,378, and Alimondian, population 7,274. From Pavia the line continues north 3.8 miles to Santa Bárbara, population, 15,149. At Santa Bárbara the railroad will get business from the rich valley of the Tigon River and the towns of Cabatúan, population 16,497; Maasin, population 8,401; and Janiuay, population 20,738. A branch might be built from Santa Bárbara to Janiuay in order to accommodate this traffic, but even if it is not built a considerable portion of the business must fall to the railroad at Santa Bárbara, as the line of communication of these towns with Iloilo is through Santa Bárbara. From Santa Bárbara the line runs northeast 5.6 miles to Lucena, population 6,362, and then 5.5 miles to Pototan, population 20,964. At Pototan the business from Mina, population 4,280, would be secured. From Pototan the line continues northeasterly 4.5 miles to Dingle, population 12,129; then 6.6 miles to Dueñas, population 6,700; then 3 miles to Passi, population 5,578. At Passi the business from the valley of the Jalaur River and the town of Calinog, population 4,194, would be secured; also from San Enrique, population 2,596. From Passi to Dumarao, population 5,479, the line passes for 12 miles through a country that is practically uninhabited, but which is for the greater part level and rich land, requiring but the touch of the brushhook and the plow to become rich sugar cane and rice fields. The provincial line dividing the provinces of Iloilo and Cápiz is passed about 7 miles from Passi. This boundary has never been well defined on the ground.

* On file in Bureau of Insular Affairs, War Department, marked Appendix 1.

From Dumarao the line continues northerly 5.9 miles to Cuartero, population 3,613. At Cuartero the business from the upper valley of the Panay River and the towns of Tapaz, population 3,741, and Dumalag, population 5,779, would be secured. From Cuartero the line continues north 3.5 miles to Dao, population 6,694. From Dao, the main line goes northeasterly 3 miles to Sigma, population 5,205, then 4.1 miles to Mambusao, population 8,225. At Mambusao business would be secured from the upper valley of the Mambusao River and the towns of Jagnaya, population 1,314, and Jamindan, population 4,788. From Dao there is shown on the index map a line running 9.3 miles to Panitan, population 7,578; 2.9 miles to Loctugan, population 2,947, and 5.1 miles to Cápiz, population 18,525. The object of this line is to provide a direct line to Cápiz from Iloilo. The index map also shows a line running along the north coast from Cápiz to Batán. The object of this line is to take in the towns of Ivisan, population 4,606, and Sapián, population 3,185, as well as to make a short connection from Cápiz to Batán. It does not seem necessary to build both the shore line and the branch line from Dao in order to get into Cápiz, but it would appear good policy to get into Cápiz by at least one way, as Cápiz secures the trade from the towns of Pontevedra, population 9,937, and Panay, population 14,361, as well as all the business descending the Panay River.

The harbor of Cápiz being so poor, it is probable that the railroad would move a large part of the product reaching Cápiz over to the deep-water terminal at Batán.

Continuing, the main line from Mambusao strikes north again 4.6 miles to near the barrio of Bilao, population 280, where the junction with the shore line is made, then northeasterly 6.8 miles to Jimeno, population 4,636, then north 3.9 miles to the terminal at Batán, population 672.

TRAFFIC.

(4) As to the traffic to be secured from this territory, absolute data can not be given, but an approximation of some value may be made by comparison with the business done by the Manila and Dagupan Railway operating in a similar territory, and by studying the movement of business through the Iloilo custom-house.

Referring to the report and statement of accounts of the Manila Railway Company submitted to the shareholders in 1903 by the general manager (see Appendix No. 2), it shows that the passengers carried in that year numbered 1,810,561, and the total amount of freight was 144,495 tons. The gross revenue from this business was ₱1,587,855, the operating expenses ₱693,007, and the net revenue ₱894,848. The report gives a statement of the business by years back to 1893, and shows that the net revenue in 1903 was over four times as great as in 1893.

The Manila and Dagupan Railway runs north from Manila through the provinces of Rizal, Bulacán, Pampanga, Tárlac, and into Pangasinán. The general character of this territory and its products are similar to those of the island of Panay.

In order to be able to make a comparison of the business to be expected on the proposed road with that done by the Manila Railway Company, a table has been made showing the population, by stations, along this line and that along the line of the proposed railway. (See Appendix 3.) It can be expected that a proportion made in regard to the anticipated traffic similar to that existing between the population along the two lines will be an approximate measure of the anticipated business. It seems true, also, that a comparison made in this way is not wholly just to the proposed railway, as there is no doubt that the density of population increases along the line of a railway. Appendix No. 3 shows that the population along the line of the Manila and Dagupan Railway from Manila to Dagupan is 309,000, while the population along the line of the proposed road is 162,000. This gives 52.4 per cent as the ratio of the Manila and Dagupan Railway's business to be expected on the new line. Using the net revenue earned by the Manila and Dagupan Railway in 1903—namely, ₱894,848—we have ₱468,900 as the net revenue to be expected on the proposed line. This revenue would pay 5 per cent interest on ₱9,378,000.

In regard to the movement of business through the Iloilo custom-house, this information can not be directly reduced into terms that will express what proportion of said business may be expected to fall to the railroad, but it may be used as a guide of some value. Appendix No. 4, part 1, shows the value of the foreign business for the years 1899 to 1904; part 2 shows, by articles, the coastwise business for the first six months of 1904.

TOPOGRAPHICAL AND HYDROGRAPHICAL FEATURES.

(5) In regard to the topographical and hydrographical features controlling the location of this line, it may be stated in general terms that no especially difficult topographical features are encountered in the territory to be served. The country from Iloilo to the north as far as Passi is almost entirely flat. Between Passi and Dumarao the island divide is passed, the highest elevation required being 256 feet above sea-level datum. From

this point the line gradually falls to an elevation of 90 feet, running through more or less open and flat country until the north coast range is reached. The line reaches the north coast through a gap in the coast range near the barrio of Bilao, the elevation at the gap being 114 feet. In order to get the line to the gap it is necessary to cross a gorge by means of a heavy fill about 400 feet long and 50 feet high at the deepest point. Several other passes over the coast range were studied, but this appeared to be the most favorable one. From the gap the line drops off rapidly to the shore at an elevation of 20 feet. The deep-water harbor at Batán Bay is, however, 11.5 miles west of this point, and the line skirts along the shore to reach the deep-water terminal, it being necessary at one point (station 420) to rise to an elevation of 140 feet. The branch line from Dao to Cápiz does not go over the north coast range, but follows along the valley of the Panay River, gradually dropping in elevation and reaching Cápiz at an elevation of 15 feet above sea-level datum.

The shore line joining Cápiz to the deep-water terminal at Batán is somewhat unfavorable as to alignment and grades, owing to the necessity of running across the drainages of the coast range. A location along the water edge is not favorable, owing to extensive swamps and irregular shore line. The shore line joins the main line at the barrio of Bilao.

The influence of the hydrographical features on the location of the line is considerable. Between Iloilo and Passi it is necessary to pass eight fair-sized rivers, requiring spans of from 125 to 600 feet. (See bridge abstract, Appendix 11.) Some difficulty is to be expected in maintaining embankments in this low rice-paddy country, particularly at points that are subjected to inundation. It does not appear practical to wholly avoid the districts subject to inundation, as many of the important rice-shipping towns are amid the rice fields right in the areas subject to floods. A large amount of water way must be provided through the embankments at such points.

From Passi to Dumarao there is but one bridge of importance, that over the Lamonan River; span, 165 feet. This portion of the line is on higher ground.

From Dumarao to Mambusao the country is similar to that from Iloilo northward. Three bridges of spans 125 to 250 feet are required. From Dao to Mambusao the inundations by the water from the Mambusao River are especially bad.

From Mambusao the line rises quickly to the pass through the north coast range and falls again to the shore line. No important bridges are needed until the town of Jimeno is reached. To get in and out of this town the river Agbalili must be crossed twice with bridges of 150-foot and 175-foot spans. An alternate location would leave the town above 1 mile west of the line and save both bridges. No further bridges are required to reach the terminal at Batán.

The branch line from Dao to Cápiz runs through rice-paddy country and will require eight minor bridges of spans 20 to 65 feet and one of 150-foot span.

The shore line from Cápiz to join the main line at the barrio of Bilao will require no important bridges, but a large number of minor bridges are required in order to span the cross drainages; also a long fill is required to cross a tidal swamp. It has been thought advisable to use a fill at this point rather than a trestle, as the piles would be exposed to the attack of the teredo. A light temporary trestle will be built in any case to facilitate the filling.

ULTIMATE LOCATION.

(6) The route of the proposed line as outlined in section 3 will probably, with minor changes, be the ultimate location of the line. The positions as fixed for the important bridges will doubtless be changed, as the survey made did not include an extended study for abutments, piers, etc.

An alternate location from Jaro north to Legañas, Zárraga, and Pototan is shown on the index map. This location, while making the line a little shorter, was not considered as favorable as the location made from Jaro to Pavia, Santa Bárbara, Lucena, and Pototan. It seemed more profitable to reach the important town of Santa Bárbara, with the business tributary to it, from the valley of the Tigon River.

At Dingle an alternate location is shown to San Enrique and Passi in place of the location from Dingle to Duenas and Passi. Closer study is needed at this point to show whether this alternate location is not a superior one, as the crossing of the Ulian River with a span of 225 feet is avoided. Only a reconnaissance was made of this route.

The branch line from Dao to Cápiz and the shore line from Cápiz to the junction with the main line at the barrio of Bilao can not exactly be considered as alternate locations. Although they would provide two ways of getting in and out of Cápiz, each line, as stated in section 3, would run through territory not reached by the other.

The alternate location at Jimeno of making a short cut-off, which would leave the town about 1 mile to the west of the line, but would save two bridges over the Agbalili River, might be preferable to the location shown. The estimated cost of the two bridges is \$46,400. By building a highway, with a light bridge over the river into the town, it is probable that the business of this town would be sufficiently well served.

GAUGE—RIGHT OF WAY.

(7) The proposed system of railways for the Philippine Islands, as originally contemplated by the Philippine Commission, was to be of standard gauge, and this estimate has been made up on that basis.

The width of the proposed right of way is 100 feet. At stations an additional 100 feet is taken for a distance of 1,500 feet. Generally, the additional width is taken on the side opposite to the station house, in order that the building may not interfere with the yard tracks.

FIXED POINTS—LEVEL DATUM.

(8) The fixed points from which distances are reckoned are three—one at Iloilo, one at Batán, and one at Cápiz. It has been thought advisable to take these three origins from which to reckon distances, as construction will probably be undertaken simultaneously at these points. The main line is numbered from Iloilo northward about halfway across the island, as far as Passi. From Batán the main line is numbered southward as far as Passi. From Cápiz the shore line is numbered southward and westward to the junction with the main line at the barrio of Bilao. The branch connection from Cápiz to Dao is numbered southward to Dao from the junction with the shore line at station 208+00.

The exact points of origin are: At Iloilo station 0+00 is 898 feet north 66° 45' west from the east base of the Coast and Geodetic Survey. The east base is about 450 feet northwest of Fort San Pedro and is a concrete block in the shape of a horseshoe about 6 by 8 inches and projecting 1 foot above the ground.

At Batán station 0+00 is on the shore of Batán Bay and is 480 feet north 86° 30' east from northeast corner of old ruined Spanish church, also 635 feet south 84° 0' east from a large almond tree marked with a cross.

At Cápiz station 0+00 is on the southwest corner of the coping of the first masonry culvert out from Cápiz on the highway from Cápiz to Iloilo. This culvert is about 1,500 feet south from the large bridge over the Panay River.

The initial point of the branch to Dao is station 209+00 of the shore line.

On the index map the various sections are in different colors to facilitate identification. The detail plan of the proposed location is on a scale of 100 feet to the inch and is in 18 rolls for convenience in handling. The part corresponding to each roll is shown and numbered on the index plan in order to identify the portion covered by each roll.

The detail profile is on a scale of 400 feet to the inch and is in pieces corresponding to the sections as made in regard to station numbering, except that the part Batán to Passi is in two pieces.

The level datum used was the Coast and Geodetic mean sea level datum established at Cápiz. The bench mark is a square hole cut in a large stone about 30 feet southeast from the shore end of the stone pantalan at La Bas (barrio of Cápiz at the harbor).

LENGTH OF LINE.

(9) The total length of all lines included in this project is 110.93 miles, divided into the following parts:

Main line (Iloilo to Passi, 35.99 miles; Batán to Passi, 43.76 miles) Iloilo to Batán—79.75 miles. Shore line—Cápiz to junction at barrio Bilao, 17.84 miles. Branch line—Shore line station 209+00 to Dao, 13.34 miles.

With this system of lines the following distances between important points would exist: Iloilo to Batán via main line, 79.75 miles; Iloilo to Cápiz via Dao and branch line, 74.62 miles; Iloilo to Cápiz via junction at Bilao and shore line, 86.87 miles; Cápiz to Batán via shore line, 28.56 miles; Cápiz to Batán via branch to Dao and main line, 39.73 miles.

GRADES AND CURVES.

(10) The maximum grade used for these proposed lines is a compensated 2 per cent grade. This grade was adopted as a reasonable one, having in view the probable requirements of traffic and the cost of construction. The country to be traversed by the proposed road is not especially difficult in regard to grades, except a portion about 5 miles long over the island divide and some 8 miles along the shore line. It would be possible to use 1.5 per cent as a maximum for grade, but the grading quantities would be materially increased, perhaps as much as 100 or 150 per cent. It does not seem as though even the ultimate development of the business of the island would justify the increased expense, in view of the fact that the traffic could be well served over a 2 per cent maximum.

The maximum curvature is 13°. Curvature is compensated as per attached table. (Appendix 7.) The maximum curvature is used but once where making the pass from the shore into the Mambusao Valley. The amount of curvature is moderate and averages 31.9° per mile for the entire system. The curve abstract table (Appendix 8) shows the distribution and other curve data.

WATER WAY.

(11) The general average of water way per mile is 99.5 feet. This is rather high, but the nature of the country and the climatic conditions require it. The averages for the various sections are shown on the bridge abstract tables. (Appendix 11.) At local points it is sometimes necessary to provide over 2 per cent of water way owing to the liability to inundations.

STATIONS, SHOPS, ENGINE DIVISIONS.

(12) Terminal stations are projected at Iloilo, Batán, and Cápiz. The attached plan (Appendix 21)^a shows the proposed arrangement of the terminal at Iloilo. It is intended to build a passenger station upon the ground to be filled in the course of the harbor improvement now under prosecution. The freight station is to be built on the north side of the river upon the ground that is to be filled there and in close proximity to the new docks and warehouses. The passenger and freight tracks will come together about one-half mile to the north of the city after the passenger tracks have crossed the river over a bridge to be built near the site of the present highway bridge. By this means the passenger station is placed within a few minutes' walk from the center of the city, and the right of way required to reach it is along the shore and through the cheaper nipa district. The freight station is placed near the river and the new docks and in close touch with the new wholesale district.

The proposed terminal at Batán is to be built close to the shore of the bay exactly opposite the point where the deepest water is found. Information obtained from the Coast and Geodetic Survey indicates that by building a pier 200 feet long cars may be run out and unload directly onto vessels of as much as 24 feet draft. The town of Batán is at present in a state of abandonment, and any desirable site for the terminal may be secured at a small cost.

The terminal at Cápiz can not be considered as important as either the Iloilo or Batán terminals. The station for both passengers and freight can be located on the south side of the Panay River, thus avoiding the necessity of building a bridge over this river. Such a location is central as regards the town, and there is no necessity of extending the line to the harbor, as the business to be expected at Cápiz would come down the Panay River and not to the harbor, which, as has been previously stated, is a very poor one and can not accommodate vessels of any importance. Should the town develop and improvements be made to the harbor, it might then be profitable to span the Panay River with a 300-foot bridge and build the additional 2 miles of line required to reach the harbor.

As regards the distribution of stations along the line, it is proposed to provide a small station at each town or barrio of 500 or more inhabitants, provided such stations have intervening intervals of at least 5 miles and not more than 10 miles, unless the importance of the town or its strategical position as regards prospective business will justify a smaller interval at local points. Appendix 5 gives a list of the proposed stations with the population of the towns. The table also shows the distances between stations, as well as the distances from the initial points.

The location for shops has not been fixed. It appears that Iloilo would be a good place for the shops, as it is one of the largest cities in the islands, and it would be possible to more readily secure and keep in a contented state the necessary force. Nevertheless, Batán has in its favor, as a location for the shops, the cheapness of the site and its possible rapid development into an important town. Passi, as a location for the shops, has in its favor its more central location and consequently more ready access of wrecking crews in case of accidents. However, the entire run from Iloilo to Batán is not great and could be made in less than two hours. In any case roundhouses will have to be provided both at Iloilo and at Batán, with possibly one at Passi and one at Cápiz.

Referring to engine divisions, it is probable that the run Iloilo to Batán can be operated as a single division. The shore line can be operated as a division from Cápiz to Batán, or the run can be made to the junction at the barrio of Bilao. The branch from Cápiz to Dao may be operated as a division.

Coaling stations should be maintained at the terminals and at the junctions at Dao and Bilao.

Water tanks are to be provided at intervals of not more than 20 miles. The table of stations (Appendix 5) indicates which stations should be provided with water tanks.

CONSTRUCTION AND ENGINEERING.

(13) The construction of this railway will probably be pushed forward from the Iloilo and Batán ends. Except as regards grading at local points, it will not be possible to work on the line from any central points owing to the almost entire lack of transportation facilities. The materials for bridges, the cement for concrete, and the ties and rails will have to

^aOn file in the Bureau of Insular Affairs, War Department.

be hauled over the line as fast as it can be made passable, putting in temporary structures wherever necessary in order to accomplish this result.

The estimates for this proposed railway is based on the use of the following constructions and materials: 1, permanent bridges of steel on concrete abutments; 2, culverts of reinforced concrete construction; 3, temporary trestles across marshes and swamps to be supported on timber piles, wherever possible all trestling to be filled in as soon as practicable; 4, rails, 70 pounds per yard; 5, ties of Philippine or Australian hard wood or California redwood in order to resist the attack of ants; 6, ballast of gravel and broken stone; gravel can be secured at Batán and in many of the creeks along the north coast line, also in the rivers at Dumarao and Passi.

At Iloilo limestone can be secured from Guimará's Island. At Santa Bárbara, 10.9 miles from Iloilo, abundance of gravel can be secured and the broken stone can be dispensed with beyond that point. At Dingle, 26.4 miles from Iloilo, there is also much gravel. In no case will it be necessary to haul ballast for a greater distance than 20 miles.

All materials, with the possible exception of the ties and of some of the piles for trestle work, will have to be imported, probably almost wholly from the United States.

EXECUTION OF WORK; LABOR.

(14) The execution of the work will probably be done by contract with some large American firm. Local subcontracts for some of the grading can be entered into with native contractors, several of whom have expressed a desire to do the work. Native labor is abundant and can readily be secured for from 40 to 50 cents local currency. It is probable that during the continuance of the work all the necessary unskilled native labor can be secured for 50 cents local currency. Native carpenters can be secured for ₱1.50 to ₱2; Japanese carpenters for ₱3 to ₱3.50. Most of the foremen, structural men, riveters, blacksmiths, etc., will have to be secured from the United States. The foremen should be patient and acquainted with the characteristics of native labor.

The means for transportation existing within the island are generally very poor and in a great many places almost wholly absent. It will be impossible to transport heavy structural parts, except over the line itself as it advances. As has been previously stated, these conditions will require that temporary bridges be put in where needed in order that the line may be made available for transportation.

LAND.

(15) The average cost of the right of way is assumed at \$75 per hectare. It is believed that this price will be ample, as in many places the line is located on side hill land of little value. Also a number of landowners have expressed their willingness to make no charge for the right of way. The right of way around and into Iloilo will run higher, but will not be very expensive, as the portion of the town run through is a nipa district. At Batán the land is cheap, as well as at Cápiz.

ESTIMATED COST.

(16) The total estimated cost for the system as herein projected, including equipment, is \$4,045,594, an average of \$36,470 per mile. The estimated cost exclusive of equipment is \$3,428,894, an average of \$30,910 per mile.

The table of estimated costs (Appendix 20) shows totals for the various items. It shows that the item for bridges and culverts is \$1,307,275, an average of \$11,274 per mile, which is high but probably reasonable under existing conditions.

The amount allowed for equipment is largely approximate and was arrived at by comparison with the equipment of the Manila and Dagupan Railway somewhat similar to that made in regard to prospective traffic. The locomotives and cars, however, were taken of standard gauge and cost computed on that basis.

The estimated cost and designs for stations was gotten up with the assistance of the bureau of architecture, Mr. Graham, the acting chief of that bureau, having taken great interest and rendered much assistance.

The designs for steel girders and trusses were adopted from standards of the Northern Pacific Railway.

The designs for water tanks were adopted from Pennsylvania Railway standards.

Respectfully submitted.

F. D. HAYDEN.

Mr. J. W. BEARDSLEY,
Consulting Engineer to the Commission, Manila, P. I.

TABULATED DETAILS ACCOMPANYING REPORT ON ILOILO-CÁPIZ-BATÁN RAILWAY SURVEY.

APPENDIX 2.—*Extract from report and statement of accounts of the Manila Railway Company (Limited) to December 31, 1903.*

[Presented to the shareholders at the seventeenth annual ordinary general meeting, on Tuesday, August 23, 1904.]

PASSENGERS.

Year.	First class.	Second class.	Third class.	Total.
1893.....	12,416	18,383	740,797	771,596
1894.....	12,782	19,648	805,077	837,507
1895.....	12,721	20,075	773,304	806,100
1896.....	12,901	18,330	743,155	774,386
1897.....	10,178	19,748	734,085	764,011
1898.....	12,480	32,903	834,106	879,489
1899 ^a	2,084	7,515	219,810	229,409
1900 ^a	5,584	9,173	496,927	511,684
1901.....	19,524	31,501	1,088,562	1,139,587
1902.....	19,679	32,134	1,052,559	1,104,372
1903.....	30,448	59,441	1,720,672	1,810,561

^a February to November, 1899, traffic interfered by insurrection. November, 1899, to April, 1900, line under United States military control.

GOODS.

Year.	Rice.	Sugar.	Cereals.	Tobacco.	Timber.	Liquids.	Cloths.	Building materials.	Sundries.	Total.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1893.....	59,623	17,361	724	530	3,429	1,463	623	1,833	20,785	106,371
1894.....	69,308	21,100	352	570	6,025	2,405	644	1,887	26,133	128,424
1895.....	94,217	23,051	2,210	642	5,979	2,412	648	1,891	27,547	158,597
1896.....	102,222	21,074	3,715	926	4,788	2,536	616	1,356	22,586	169,819
1897.....	141,747	23,258	6,814	1,829	6,863	3,815	969	1,946	26,939	214,180
1898.....	106,722	12,737	4,947	1,796	8,844	2,228	499	606	19,932	168,311
1899.....	13,572	2,315	.....	782	916	.....	70	304	4,253	2,212
1900.....	38,199	3,367	.....	546	3,976	.....	316	2,708	15,268	64,380
1901.....	46,057	4,135	.....	985	10,070	.....	721	2,757	36,391	101,116
1902.....	56,799	10,890	.....	1,604	18,892	.....	996	7,609	40,165	136,955
1903.....	56,893	8,904	.....	1,420	21,060	.....	946	13,398	41,874	144,495

TOTAL GROSS RECEIPTS AND EXPENDITURE IN MANILA.

Year.	Gross receipts.	Expenditure.	Surplus.	Working expenses percentage of gross receipts.
1893.....	P 508,315.23	P 287,292.98	P 221,022.25	56.5
1894.....	568,589.30	292,583.75	276,005.55	51.0
1895.....	613,225.06	316,011.02	297,214.04	51.5
1896.....	612,707.72	324,246.83	288,460.89	52.9
1897.....	733,178.78	345,832.19	387,346.59	47.7
1898.....	778,340.10	352,406.38	425,933.72	45.3
1899.....	166,458.65	148,019.15	18,439.50	88.9
1900.....	740,135.20	309,931.12	430,204.08	41.9
1901.....	1,321,375.98	558,552.92	762,823.06	42.2
1902.....	1,238,235.05	524,844.17	713,390.88	42.39
1903.....	1,587,854.93	693,007.13	894,847.80	43.64

APPENDIX 3.—*Comparison of population along the line of the Manila and Dagupan Railway, and along proposed Iloilo-Cápiz-Batán Railway.*

[In this comparison the population of Manila and that of Iloilo are not included as these cities do not depend exclusively on the railways for transportation.]

Manila and Dagupan Railway.		Iloilo-Cápiz-Batán Railway.	
Stations.	Popula- tion.	Stations.	Popula- tion.
Manila.....	(a)	Iloilo.....	(a)
Calacagan.....	6,291	La Paz.....	5,724
Polo.....	8,183	Jaro.....	10,064
Meycauayan.....	9,742	Pavia.....	5,700
Marilao.....	3,506	Santa Bárbara.....	15,149
Bocaue.....	8,438	Lucena.....	6,362
Bigaa.....	8,000	Pototan.....	20,964
Quingua.....	7,229	Dingle.....	12,129
Baliuag.....	15,936	Duhas.....	6,700
Maasin.....	(b)	Passi.....	7,578
San Ildefonso.....	(b)	Dumarao.....	5,479
San Miguel de Mayumo.....	(b)	Cuartero.....	3,613
Baluarte.....	(b)	Dao.....	6,694
San Isidro-Capan.....	(b)	Sigma.....	5,205
Peñaranda.....	(b)	Mambusao.....	8,225
Santa Rosa.....	(b)	Bilao.....	280
Cabanatúan.....	(b)	Jimeno.....	4,636
Guiguinto.....	3,948	Batán.....	672
Malolos.....	12,575	Sapian.....	3,185
Calumpit.....	13,897	Ivisan.....	4,006
Apalit.....	12,306	Cápiz.....	18,525
Santo Tomás.....	4,271	Loctugan.....	2,947
San Fernando.....	13,556	Panitan.....	7,578
Calulut.....	(c)		
Angeles.....	10,646		
Dau Junction.....	d 5,000		
Stotsenberg.....	7,049		
Mabalacat.....	3,002		
Bamban.....	4,213		
Capas.....	2,679		
Murcia.....	541		
San Miguel.....	12,340		
Tárlac.....	13,615		
Gerona.....	12,982		
Paniqui.....	13,003		
Moncada.....	6,661		
Bautista.....	11,098		
Bayambang.....	14,550		
Malasiqui.....	27,166		
San Carlos.....	16,539		
Calasiao.....	20,357		
Dagupan.....			
Total.....	309,219	Total.....	162,005

a Not included.

b Not open at time report was made.

c Included in San Fernando.

d Estimated; not on census report.

Ratio of Iloilo-Cápiz-Batán Railway population to Manila and Dagupan Railway population:

$$\frac{162,000}{309,000} = 52.4 \text{ per cent.}$$

APPENDIX 4.—*Extract from the customs report for the port of Iloilo.*

PART 1. FOREIGN BUSINESS.

	1899.	1900.	1901.	1902.	1903.	1904.
Twelve months ending June:						
Imports.....	\$420,418	\$1,235,445	\$2,336,918	\$1,931,800	\$2,582,883	\$2,447,670
Exports.....	1,732,632	2,076,244	1,512,046	2,517,814	4,108,028	2,833,324

APPENDIX 4.—*Extract from the customs report from the port of Iloilo*—Continued.

PART 2. COASTWISE BUSINESS FOR FIRST SIX MONTHS OF 1904, AS SHOWN BY COASTWISE MANIFESTS.

Article.	Received.	Shipped.
Hemp.....bales..	623	458
Rice.....kilos..	340,345	6,132,292
Copra.....do....	5,140	5,400
Tobacco.....do....	389,490	90,160
Timber.....cubic feet..	22,275	9,160
Coal.....kilos..	200,000	210,420
Charcoal and firewood.....do....	1,977,410	87,760
Brick tiling.....do....	2,600	246,850
Sugar.....do....	33,079,704	3,942,455
General merchandise.....do....	998,670	1,650,475
Machinery.....do....	3,205	23,749
Swine.....number..	169	2
Cattle.....do....	934	419
Horses.....do....	88	53
Miscellaneous.....kilos..	3,231,671	4,191,940

APPENDIX 5.—*Iloilo-Cápiz-Batan Railway—Table of stations, distances, and population*

Stations.	Miles.		Popula- tion.	Total popula- tion.	Capacity of water tanks.
	Total.	Between stations.			
MAIN LINE.					
Iloilo.....			a 19,054		Gallons. 50,000
La Paz.....	1.89	1.89	5,724		
Jaro.....	3.14	1.25	10,054		
Pavia.....	7.10	3.96	5,700		
Santa Bárbara.....	10.86	3.76	15,149		23,000
Lucena.....	16.48	5.62	6,362		
Pototan.....	21.96	5.48	20,964		23,000
Dingle.....	26.43	4.47	12,129		
Dueñas.....	33.03	6.60	6,700		
Passi.....	35.99	2.96	7,578		23,000
Dumarao.....	47.96	11.97	5,479		23,000
Quartero.....	53.87	5.91	3,613		
Dao.....	57.32	3.45	6,694		50,000
Sigma.....	60.33	3.01	5,205		
Mambusao.....	64.39	4.06	8,225		
Bilao (Junction).....	69.03	4.64	280		50,000
Jimeno.....	75.81	6.78	4,636		
Batan.....	79.75	3.94	672	144,218	50,000
SHORE LINE.					
Cápiz.....			18,525		50,000
Ivisan.....	8.81	8.81	4,606		
Saplan.....	15.82	7.01	3,185		
Bilao (Junction).....	17.84	2.02	280	b 26,316	50,000
BRANCH TO DAO.					
Cápiz.....			18,525		50,000
Loctugan.....	5.07	5.07	2,947		
Panitan.....	7.93	2.86	7,578		
Dao.....	17.27	9.34	6,694	c 10,525	50,000
Total population.....				181,059	

^a Not including incorporated barrios.^b Not including Bilao.^c Not including Cápiz or Dao.

APPENDIX 6.—Table of alignment.

PART A—SECTION: ILOILO-PASSI.

Station No.	Tangent bearing.	Distance data.	Curve data.				
			Radius.	Length.	Tangent.	Central angle.	Degree.
	° ' "	Feet.		Feet.		° ' "	° ' "
00+00.....	N. 81 45 W.	3,349					
33+49.....			955.37	1,341	808.0	80 28	6 00
46+90.....	N. 1 17 W.	462					
51+52.....			1,432.69	578	293.2	23 7	4 00
57+30.....	N. 21 50 E.	2,131					
78+61.....			1,432.69	1,008	526.1	40 20	4 00
88+69.....	N. 18 30 W.	1,165					
100+34.....			2,864.93	1,079	546.1	21 35	2 00
111+13.....	N. 40 5 W.	14,140					
252+53.....			2,864.93	1,583	812.5	31 40	2 00
268+36.....	N. 8 25 W.	8,584					
354+26.....			955.37	919	498.9	55 10	6 00
363+39.....	N. 46 45 E.	481					
368+20.....			955.37	965	528.4	57 55	6 00
377+85.....	N. 11 10 W.	17,904					
556+89.....			955.37	726	381.7	43 35	6 00
564+15.....	N. 32 25 E.	2,719					
591+34.....			955.37	780	413.6	46 50	6 00
599+14.....	N. 79 15 E.	1,072					
609+86.....			1,432.69	733	374.9	29 20	4 00
617+19.....	N. 49 55 E.	26,635					
883+54.....			5,729.65	2,133	1,079.2	21 20	1 00
904+87.....	N. 28 35 E.	25,803					
1162+90.....			1,910.08	430	216.2	12 55	3 00
1167+20.....	N. 41 30 E.	6,139					
1228+59.....			5,729.65	2,058	1,040.4	20 35	1 00
1249+17.....	N. 20 55 E.	13,930					
1388+47.....			955.37	1,130	641.7	67 48	6 00
1399+77.....	N. 47 34 W.	3,713					
1436+90.....			1,432.69	835	429.7	33 24	4 00
1445+25.....	N. 80 58 W.	5,177					
1497+02.....			2,864.93	1,805	933.2	36 6	2 00
1515+07.....	N. 44 52 W.	9,046					
1605+53.....			2,864.93	2,055	1,073.9	41 06	2 00
1626+08.....	N. 3 46 W.	11,732					
1741+40.....			2,864.93	1,694	871.3	33 50	2 00
1758+32.....	N. 30 04 E.	14,268					

PART B—SECTION: BATAN-PASSI.

00+00.....	S. 46 30 E.	1,477					
14+77.....			955.37	1,267	746.1	76 00	6 00
27+44.....	S. 29 30 W.	1,328					
40+72.....			2,864.93	1,100	1,556.9	22 00	2 00
51+72.....	S. 7 30 W.	1,473					
66+45.....			5,729.65	1,300	652.9	13 00	1 00
79+45.....	S. 5 30 E.	651					
85+96.....			1,146.28	915	483.1	45 45	5 00
95+11.....	S. 51 15 E.	1,756					
112+67.....			573.69	686	390.7	68 35	10 00
119+53.....	S. 17 20 W.	287					
122+40.....			716.78	308	157.1	24 45	8 00
125+48.....	S. 7 25 E.	752					
133+00.....			441.68	615	369.2	79 55	13 00
139+15.....	S. 72 30 W.	735					
146+50.....			716.78	453	234.3	36 15	8 00
151+03.....	S. 36 15 W.	547					
156+50.....			2,864.93	325	162.7	6 30	2 00
159+75.....	S. 29 45 W.	4,725					
207+00.....			716.78	1,066	659.1	85 15	8 00
217+66.....	S. 55 30 E.	318					
220+84.....			1,910.08	700	354.0	21 00	3 00
227+84.....	S. 76 30 E.	2,464					
252+48.....			2,864.93	2,004	1,045.1	40 5	2 00
272+52.....	S. 36 25 E.	4,321					
315+73.....			5,729.65	1,875	946.0	18 45	1 00
334+48.....	S. 55 10 E.	8,227					
416+75.....			5,729.65	167	83.3	1 40	1 00
418+42.....	S. 53 30 E.	2,686					
445+28.....			2,864.93	1,713	882.3	34 15	2 00
462+41.....	S. 87 45 E.	1,659					
479+00.....			2,864.93	1,425	727.5	28 30	2 00
493+25.....	S. 59 15 E.	7,185					
565+10.....			2,864.93	837	421.7	16 45	2 00

APPENDIX 6.—Table of alignment—Continued.

PART B—SECTION: BATAN-PASSI—Continued.

Station No.	Tangent bearing.	Distance data.	Curve data.				
			Radius.	Length.	Tangent.	Central angle.	Degree.
	° ' "	Feet.		Feet.		° ' "	° ' "
573+47.....	S. 42 30 E.	5,118					
624+65.....			716.78	675	364.9	54 00	8 00
631+40.....	S. 11 30 W.	648					
637+88.....			478.34	700	429.9	84 00	12 00
644+88.....	S. 72 30 E.	896					
653+86.....			955.37	264	132.8	15 50	6 00
656+50.....	S. 88 20 E.	336					
659+86.....			573.69	388	201.9	38 50	10 00
663+74.....	S. 49 30 E.	2,280					
686+54.....			5,729.65	2,058	1,040.4	20 35	1 00
707+12.....	S. 28 55 E.	2,988					
737+00.....			5,729.65	4,267	2,237.7	42 40	1 00
770+67.....	S. 13 45 W.	2,980					
809+47.....			573.69	1,023	710.1	102 15	10 00
819+70.....	S. 88 30 E.	701					
826+71.....			2,864.93	897	452.9	17 58	2 00
835+68.....	S. 70 32 E.	26,032					
1096+00.....			2,864.93	1,927	1,001.4	38 32	2 00
1115+27.....	S. 32 00 E.	3,123					
1146+50.....			2,864.93	2,700	1,459.7	54 00	2 00
1173+50.....	S. 22 00 W.	14,402					
1317+52.....			1,146.28	1,905	1,256.0	95 15	5 00
1336+57.....	S. 73 15 E.	855					
1345+12.....			716.78	863	492.8	69 4	8 00
1353+75.....	S. 11 4 E.	13,295					
1486+70.....			716.78	480	249.4	38 25	8 00
1491+50.....	S. 34 14 W.	280					
1494+30.....			819.02	1,049	611.0	73 29	7 00
1504+79.....	S. 39 15 E.	3,671					
1541+50.....			2,864.93	1,338	681.2	26 45	2 00
1554+88.....	S. 12 30 E.	5,041					
1605+29.....			2,864.93	1,138	576.3	22 45	2 00
1616+67.....	S. 10 15 W.	782					
1624+49.....			2,864.93	1,329	676.8	26 35	2 00
1637+78.....	S. 36 50 W.	13,284					
1770+62.....			2,864.93	775	389.9	15 30	2 00
1778+37.....	S. 52 20 W.	2,388					
1802+29.....			573.69	883	556.5	88 20	10 00
1811+08.....	S. 36 00 E.	292					
1814+00.....			1,432.69	1,550	860.7	62 00	4 00
1829+50.....	S. 26 00 W.	4,356					
1873+06.....			5,729.65	1,150	576.9	11 30	1 00
1884+56.....	S. 14 30 W.	12,524					
2000+80.....			2,864.93	971	490.1	19 25	2 00
2019+51.....	S. 33 55 W.	1,001					
2029+52.....			2,864.93	871	438.8	17 25	2 00
2038+23.....	S. 16 30 W.	6,097					
2099+20.....			2,864.93	1,593	816.9	31 50	2 00
2115+13.....	S. 15 20 E.	365					
2118+78.....			2,864.93	2,000	1,042.7	40 00	2 00
2138+78.....	S. 55 20 E.	402					
2142+80.....			1,910.08	1,283	667.0	38 30	3 00
2156+63.....	S. 16 50 E.	2,022					
2175+85.....			5,729.65	2,706	1,380.0	27 05	1 00
2202+93.....	S. 43 55 E.	1,625					
2219+18.....			2,864.93	1,883	977.1	37 40	2 00
2238+01.....	S. 6 15 E.	6,890					
2306+91.....			1,432.69	890	459.7	35 35	4 00
2315+81.....	S. 29 20 W.	419					

PART C.—SECTION: CÁPIZ-BILAO.

Station No.	Tangent bearing.	Distance data.	Curve data.				
			Radius.	Length.	Tangent.	Central angle.	Degree.
	° ' "	Feet.		Feet.		° ' "	° ' "
00+00.....	S. 8 05 E.	4,128					
41+28.....			955.37	832	444.4	49 55	6 00
49+60.....	S. 58 00 E.	270					
52+30.....			1,432.69	1,417	772.3	56 40	4 00
66+47.....	S. 1 20 E.	15,297					
219+44.....			955.37	1,001	552.2	60 05	6 00
229+45.....	S. 58 45 W.	5,354					
282+09.....			1,910.08	1,483	781.4	44 30	3 00
297+82.....	N. 76 45 W.	15,335					
451+17.....			955.37	1,083	609.3	65 05	6 00

APPENDIX 6.—Table of alignment—Continued.

PART C.—SECTION: CAPIZ-BILAO—Continued.

Station No.	Tangent bearing.	Distance data.	Curve data.				Degree.
			Radius.	Length.	Tangent.	Central angle.	
462+00.....	S. 38 10 W.	<i>Feet.</i> 4,836					
510+36.....			2,864.93	1,292	657.0	25 50	2 00
523+28.....	S. 64 00 W.	3,032					
553+60.....			955.37	664	363.4	41 40	6 00
560+54.....	S. 22 20 W.	1,855					
579+09.....			1,432.69	1,177	624.0	47 05	4 00
590+86.....	S. 69 25 W.	1,174					
602+60.....			955.37	165	82.8	9 55	6 00
604+25.....	S. 59 30 W.	299					
607+24.....			955.37	506	260.3	30 30	6 00
612+32.....	N. 87 50 W.	10,548					
717+80.....			2,864.93	217	106.6	4 20	2 00
719+97.....	S. 87 50 W.	8,018					
800+15.....			2,864.93	667	334.8	13 20	2 00
806+82.....	S. 74 30 W.	2,706					
833+88.....			478.34	626	366.9	75 05	12 00
840+14.....	N. 30 25 W.	256					
842+70.....			955.37	942	513.1	56 30	6 00
852+12.....	N. 86 55 W.	3,203					
884+15.....			955.37	618	320.3	37 05	6 00
890+33.....	S. 56 00 W.	3,765					
927+98.....			955.37	1,078	676.9	70 40	6 00
938+76.....	N. 53 05 W.	289					

PART D.—SECTION: CAPIZ-DAO.

Station No.	Tangent bearing.	Distance data.	Radius.	Length.	Tangent.	Central angle.	Degree.
00.....			5,729.65	1,267	636.0	12 40	1 00
12+67.....	S. 14 0 E.	15,787					
170+54.....			5,729.65	2,733	1,393.2	27 20	1 00
197+87.....	S. 13 20 W.	6,110					
258+97.....			1,432.69	854	440.2	34 10	4 00
267+51.....	S. 47 30 W.	1,718					
284+69.....			5,729.65	2,183	1,105.1	21 50	1 00
306+52.....	S. 25 40 W.	5,742					
363+64.....			5,729.65	1,800	907.5	18 00	1 00
381+94.....	S. 43 40 W.	7,766					
459+60.....			4,911.15	4,250	2,268.3	49 35	1 10
502+10.....	N. 86 45 W.	10,732					
609+42.....			955.37	1,626	1,090.3	97 35	6 00
625+68.....	S. 4 20 E.	442					
630+10.....			716.78	404	207.6	32 20	8 00
634+14.....	S. 28 00 W.	6,440					
698+54.....			5,729.65	600	300.3	6 00	1 00
704+54 ^a							

^a End of line and junction at station 1,183+60 of section Batan-Passi.

APPENDIX 7.—Iloilo-Capiz-Batan Railway.

CURVE COMPENSATION TABLE TO BE USED UNDER ORDINARY CIRCUMSTANCES.

Curve.	Compensation per degree of curve.	Compensation in grade equivalent.	Resultant allowable grade on curve.	Curve.	Compensation per degree of curve.	Compensation in grade equivalent.	Resultant allowable grade on curve.
		<i>Per cent.</i>	<i>Per cent.</i>			<i>Per cent.</i>	<i>Per cent.</i>
15 degrees.....	0.10	1.5	0.5	7 degrees.....	0.10	0.7	1.3
14 degrees.....	.10	1.4	.6	6 degrees.....	.10	.6	1.4
13 degrees.....	.10	1.3	.7	5 degrees.....	.10	.5	1.5
12 degrees.....	.10	1.2	.8	4 degrees.....	.10	.4	1.6
11 degrees.....	.10	1.1	.9	3 degrees.....	.10	.3	1.7
10 degrees.....	.10	1.0	1.0	2 degrees.....	.10	.2	1.8
9 degrees.....	.10	.9	1.1	1 degree.....	.10	.1	1.9
8 degrees.....	.10	.8	1.2	0 degree.....	.10	.0	2.0

For special points where the compensation of 0.1 per cent per degree of curvature would involve a large loss in elevation and consequent heavy cutting, the curve compensation may be reduced to 0.05 per cent per degree of curvature. See other table.

APPENDIX 7.—*Iloilo-Cápiz-Batan Railway*—Continued.

CURVE COMPENSATION TABLE TO BE USED UNDER SPECIAL CONDITIONS WHERE MUCH LOSS OF ELEVATION CAN NOT BE ALLOWED.

Curve.	Compensation per degree of curve.	Compensation in grade equivalent.	Resultant allowable grade on curve.	Curve.	Compensation per degree of curve.	Compensation in grade equivalent.	Resultant allowable grade on curve.
		<i>Per cent.</i>	<i>Per cent.</i>			<i>Per cent.</i>	<i>Per cent.</i>
15 degrees.....	0.05	0.75	1.25	7 degrees.....	0.05	0.35	1.65
14 degrees.....	.05	.70	1.30	6 degrees.....	.05	.30	1.70
13 degrees.....	.05	.65	1.35	5 degrees.....	.05	.25	1.75
12 degrees.....	.05	.60	1.40	4 degrees.....	.05	.20	1.80
11 degrees.....	.05	.55	1.45	3 degrees.....	.05	.15	1.85
10 degrees.....	.05	.50	1.50	2 degrees.....	.05	.10	1.90
9 degrees.....	.05	.45	1.55	1 degree.....	.05	.05	1.95
8 degrees.....	.05	.40	1.60	0 degree.....	.05	.00	2.00

APPENDIX 8.—*Curve abstract Iloilo-Cápiz-Batan Railway.*

PART A.—SECTION: ILOILO-PASSI.

[36 miles, 1901 stations.]

Curvature or radius.	Number of each.	Total length.	Total curvature.
		<i>Miles.</i>	<i>° ' "</i>
13 degrees (R. 441.68).....			
12 degrees (R. 478.34).....			
11 degrees (R. 521.67).....			
10 degrees (R. 573.66).....			
9 degrees (R. 637.28).....			
8 degrees (R. 716.78).....			
7 degrees (R. 819.02).....			
6 degrees (R. 955.37).....	6	1.11	351 46
5 degrees (R. 1,146.28).....			
4 degrees (R. 1,432.69).....	4	.59	126 10
3 degrees (R. 1,910.08).....	1	.08	12 55
2 degrees (R. 2,864.93).....	5	1.56	164 16
1 degree (R. 5,729.65).....	2	.79	41 55
Total.....	18	4.13	697 02

Ratio of curve to total length of line, 11.4 per cent; average curvature per mile, 19.3°; longest continuous curve of maximum degree of curvature is 1,341 feet long.

PART B.—SECTION: BATAN-PASSI.

[43.94 miles, 2320 stations.]

		<i>Miles.</i>	<i>° ' "</i>
13 degrees (R. 441.68).....	1	0.12	79 55
12 degrees (R. 478.34).....	1	.13	84 00
11 degrees (R. 521.67).....			
10 degrees (R. 573.66).....	4	.56	298 00
9 degrees (R. 637.28).....			
8 degrees (R. 716.78).....	6	.73	307 38
7 degrees (R. 819.02).....	1	.20	73 26
6 degrees (R. 955.37).....	2	.29	91 52
5 degrees (R. 1,146.28).....	2	.53	141 00
4 degrees (R. 1,432.69).....	2	.46	97 36
3 degrees (R. 1,910.08).....	2	.37	59 29
2 degrees (R. 2,864.93).....	18	4.71	496 37
1 degree (R. 5,729.65).....	7	2.56	135 15
Total.....	46	10.66	1,864 48

Ratio of curve to total length of line, 24.3 per cent; average curvature per mile, 42.4°; longest continuous curve of maximum degree of curvature is 615 feet long.

APPENDIX 8.—*Curve abstract Iloilo-Capiz-Batan Railway—Continued.*

PART C.—SECTION: CAPIZ-BILAO.

[17.83 miles, 641+65 stations.]

Curvature or radius.	Num- ber of each.	Total length.	Total curvature.
		<i>Miles.</i>	<i>° ' "</i>
13 degrees (R. 441.68)	1	0.12	75 05
12 degrees (R. 478.34)			
11 degrees (R. 521.67)			
10 degrees (R. 573.69)			
9 degrees (R. 637.28)			
8 degrees (R. 716.78)			
7 degrees (R. 819.02)			
6 degrees (R. 955.37)	9	1.32	421 25
5 degrees (R. 1,146.28)			
4 degrees (R. 1,432.69)	2	.49	103 45
3 degrees (R. 1,910.08)	1	.28	44 30
2 degrees (R. 2,864.93)	3	.41	43 30
Total	16	2.62	688 15

Ratio of curve to total length of line, 14.7 per cent; average curvature per mile, 38.6°; longest continuous curve of maximum degree of curvature is 626 feet long.

PART D.—SECTION: CAPIZ-DAO.

[13.34 miles, 704+54 stations.]

		<i>Miles.</i>	<i>° ' "</i>
8 degrees (R. 716.78)	1	0.08	32 20
6 degrees (R. 955.37)	1	.30	97 35
4 degrees (R. 1,432.69)	1	.16	34 10
1 degree 10 minutes (R. 4,911.15)	1	.80	49 35
1 degree (R. 5,729.65)	5	1.63	85 50
Total	9	2.97	299 30

Ratio of curve to total length of line, 22.2 per cent; average curvature per mile, 22.4°; longest continuous curve of maximum degree of curvature is 404 feet long.

APPENDIX 9.—*Gradient table, Iloilo-Capiz-Batan Railway.*

PART A.—SECTION: ILOILO-PASSI.

Stations.	Grade points (elevations).		Dis- tance.	Eleva- tion.	Per cent.	
					Plus.	Minus.
			<i>Feet.</i>	<i>Feet.</i>		
0+00 to 100+00	13.0	13.0	10,000			
100+00 to 180+00	13.0	29.0	8,000	16.0	0.20	
180+00 to 290+00	29.0	40.0	11,000	11.0	.10	
290+00 to 350+00	40.0	52.0	6,000	12.0	.20	
350+00 to 362+00	52.0	58.0	1,200	6.0	.50	
362+00 to 390+00	58.0	58.0	2,800			
390+00 to 550+00	58.0	102.0	16,000	44.0	.275	
550+00 to 600+00	102.0	95.0	5,000	7.0		0.14
600+00 to 610+00	95.0	95.0	1,000			
610+00 to 630+00	95.0	105.0	2,000	10.0	.50	
630+00 to 670+00	105.0	105.0	4,000			
670+00 to 674+20	105.0	113.3	420	8.3	1.98	
674+20 to 686+00	113.3	90.0	1,180	23.3		1.98
686+00 to 695+60	90.0	109.5	960	19.5	2.03	
695+60 to 709+00	109.5	89.7	1,340	19.8		1.48
709+00 to 715+60	89.7	103.0	660	13.3	2.02	
715+60 to 723+00	103.0	88.0	740	15.0		2.03
723+00 to 737+00	88.0	116.0	1,400	28.0	2.00	
737+00 to 746+50	116.0	97.0	950	19.0		2.00
746+50 to 754+00	97.0	97.0	750			
754+00 to 758+60	97.0	106.5	460	9.5	2.06	
758+60 to 762+50	106.5	99.0	390	7.5		1.92
762+50 to 770+00	99.0	99.0	750			
770+00 to 792+00	99.0	66.0	2,200	33.0		1.50
792+00 to 800+00	66.0	66.0	800			
800+00 to 833+00	66.0	59.5	3,300	6.5		.20
833+00 to 850+00	59.5	76.0	1,700	16.5	.97	
850+00 to 855+00	76.0	66.0	500	10.0		2.00
855+00 to 930+00	66.0	72.0	7,500	6.0	.08	
930+00 to 940+00	72.0	68.0	1,000	4.0		.40
940+00 to 1050+00	68.0	68.0	1,000			
1050+00 to 1100+00	68.0	82.0	5,000	14.0	.28	

APPENDIX 9.—Gradient table, Iloilo-Cápiz-Batan Railway—Continued.

PART A.—SECTION: ILOILO-PASSI—Continued.

Stations.	Grade points (elevations).		Dis- tance.	Eleva- tion.	Per cent.	
	Feet.	Feet.			Plus.	Minus.
1100+00 to 1110+00.....	82.0	77.0	1,000	5.0		.50
1110+00 to 1150+00.....	77.0	77.0	4,000			
1150+00 to 1197+30.....	77.0	84.0	4,730	7.0	.15	
1197+30 to 1211+30.....	84.0	63.0	1,400	21.0		1.50
1211+30 to 1250+00.....	63.0	63.0	3,870			
1250+00 to 1270+00.....	63.0	66.0	2,000	3.0	.15	
1270+00 to 1318+00.....	66.0	66.0	4,800			
1318+00 to 1337+30.....	66.0	104.5	1,930	38.5	2.00	
1337+30 to 1351+00.....	104.5	77.0	1,370	27.5		2.00
1351+00 to 1370+00.....	77.0	77.0	1,900			
1370+00 to 1390+00.....	77.0	86.0	1,000	9.0	.90	
1390+00 to 1400+00.....	86.0	82.0	2,000	4.0		.20
1400+00 to 1452+50.....	82.0	80.0	5,250	2.0		.04
1452+50 to 1469+50.....	80.0	100.0	1,700	20.0	1.18	
1469+50 to 1498+50.....	100.0	83.0	2,900	17.0		.59
1498+50 to 1517+00.....	83.0	83.0	1,850			
1517+00 to 1527+00.....	83.0	83.0	1,000	10.0	1.00	
1527+00 to 1554+30.....	83.0	100.5	2,730	15.5	.64	
1554+30 to 1571+50.....	100.5	135.0	1,720	34.5	2.01	
1571+50 to 1590+00.....	135.0	118.0	850	17.0		2.00
1590+00 to 1607+50.....	118.0	164.5	2,750	46.5	1.69	
1607+50 to 1635+00.....	164.5	115.0	2,750	49.5		1.80
1635+00 to 1648+00.....	115.0	102.0	1,300	13.0		1.00
1648+00 to 1655+60.....	102.0	117.5	760	15.5	2.04	
1655+60 to 1670+00.....	117.5	89.0	1,440	28.5		1.97
1670+00 to 1716+30.....	89.0	107.5	4,630	17.5	.37	
1716+30 to 1738+60.....	107.5	153.0	2,230	45.5	2.04	
1738+60 to 1745+50.....	153.0	153.0	690			
1745+50 to 1761+20.....	153.0	128.0	1,570	25.0		1.59
1761+20 to 1767+00.....	128.0	128.0	580			
1767+00 to 1786+30.....	128.0	166.5	1,930	38.5	2.00	
1786+30 to 1810+00.....	166.5	119.0	2,370	47.5		2.00
1810+00 to 1863+00.....	119.0	122.0	5,300	3.0	.06	
1863+00 to 1890+00.....	122.0	130.0	1,700	8.0	.47	
1890+00 to 1901+00.....	130.0	130.0	2,100			

GRADIENT ABSTRACT.

Grade.	Number.	Distance.	Grade.	Number.	Distance.
		Feet.			Feet.
2.0 to 1.8 per cent.....	19	22,260	0.6 to 0.4 per cent.....	5	8,800
1.8 to 1.6 per cent.....	2	5,500	0.4 to 0.2 per cent.....	5	17,880
1.6 to 1.4 per cent.....	4	6,510	0.2 to 0.0 per cent.....	11	71,560
1.4 to 1.2 per cent.....			0.0 to 0.0 per cent.....	16	50,890
1.2 to 1.0 per cent.....	1	1,700			
1.0 to 0.8 per cent.....	4	5,000			
0.8 to 0.6 per cent.....					
			Total.....	67	190,100

PART B.—SECTION: BATAN-PASSI.

Stations.	Grade points (elevations).		Dis- tance.	Eleva- tion.	Per cent.	
	Feet.	Feet.			Plus.	Minus.
0+00 to 76+00.....	15.0	15.0	7,600			
76+00 to 86+00.....	15.0	35.0	1,000	20.0	2.00	
86+00 to 90+00.....	35.0	35.0	400			
90+00 to 104+60.....	35.0	13.0	1,460	22.0		1.50
104+60 to 133+60.....	13.0	13.0	2,900			
133+60 to 138+50.....	13.0	20.0	490	7.0	1.43	
138+50 to 252+00.....	20.0	20.0	11,350			
252+00 to 290+00.....	20.0	25.0	3,800	5.0	.13	
290+00 to 310+00.....	25.0	45.0	2,000	20.0	1.00	
310+00 to 335+00.....	45.0	45.0	2,500			
335+00 to 360+00.....	45.0	75.0	2,500	30.0	1.20	
360+00 to 400+00.....	75.0	100.0	4,000	25.0	.624	
400+00 to 420+00.....	100.0	140.0	2,000	40.0	2.00	
420+00 to 430+00.....	140.0	127.5	1,000	12.5		1.25
430+00 to 474+30.....	127.5	50.0	4,430	77.5		1.75
474+30 to 505+00.....	50.0	50.0	3,070			

APPENDIX 9.—*Gradient table, Iloilo-Capiz-Batan Railway—Continued.*

PART B.—SECTION: BATAN-PASSI—Continued.

Stations.	Grade points (elevations).		Distance.	Elevation.	Percent.	
	Feet.	Feet.			Plus.	Minus.
505+00 to 530+00	50.0	25.0	2,500	25.0		1.00
530+00 to 580+00	25.0	25.0	3,000			
580+00 to 586+40	25.0	28.0	640	3.0	.47	
586+40 to 600+00	28.0	20.0	3,360	8.0		.24
600+00 to 614+40	20.0	20.0	1,440			
614+40 to 625+00	20.0	41.5	1,080	21.5	2.00	
625+00 to 638+00	41.5	64.5	1,300	23.0	1.77	
638+00 to 642+00	64.5	70.0	400	6.0	1.38	
642+00 to 662+00	70.0	85.0	2,000	15.0	.75	
662+00 to 664+00	85.0	88.0	200	3.0	1.50	
664+00 to 677+15	88.0	114.5	1,315	26.5	2.02	
677+15 to 725+15	114.5	90.5	4,800	24.0		.50
725+15 to 736+85	90.5	113.5	1,170	23.0	1.97	
736+85 to 764+00	113.5	65.0	2,715	48.5		1.79
764+00 to 830+00	65.0	65.0	6,600			
830+00 to 1,130+00	65.0	47.0	30,000	18.0		.06
1,130+00 to 1,138+00	47.0	51.0	800	4.0	.50	
1,138+00 to 1,178+00	51.0	45.0	4,000	6.0		.15
1,178+00 to 1,251+00	45.0	45.0	7,300			
1,251+00 to 1,271+00	45.0	75.0	2,000	30.0	1.50	
1,271+00 to 1,283+00	75.0	60.0	1,200	15.0		1.25
1,283+00 to 1,335+00	60.0	60.0	5,200			
1,335+00 to 1,342+00	60.0	67.0	700	7.0	1.00	
1,342+00 to 1,347+00	67.0	67.0	500			
1,347+00 to 1,354+00	67.0	56.5	700	10.5		1.50
1,354+00 to 1,400+00	56.5	70.0	13,800	13.5	.10	
1,400+00 to 1,540+00	70.0	70.0	5,000			
1,540+00 to 1,610+00	70.0	84.0	7,000	14.0	.20	
1,610+00 to 1,618+00	84.0	100.0	800	16.0	2.00	
1,618+00 to 1,631+40	100.0	80.0	1,340	20.0		1.50
1,631+40 to 1,650+00	80.0	80.0	1,860			
1,650+00 to 1,750+00	80.0	100.0	10,000	20.0	.20	
1,750+00 to 1,780+00	100.0	115.0	3,000	15.0	.50	
1,780+00 to 1,802+00	115.0	158.0	2,200	44.0	2.00	
1,802+00 to 1,810+00	158.0	171.0	800	12.0	1.50	
1,810+00 to 1,826+00	171.0	200.0	1,800	29.0	1.81	
1,826+00 to 1,868+40	200.0	246.0	4,240	46.0	1.09	
1,868+40 to 1,868+40	246.0	229.0	2,800	17.0		.61
1,868+40 to 1,922+80	229.0	256.0	2,640	27.0	1.02	
1,922+80 to 1,930+00	256.0	245.0	720	11.0		1.53
1,930+00 to 1,951+00	245.0	203.0	2,100	42.0		2.00
1,951+00 to 1,961+00	203.0	215.0	1,000	12.0	1.20	
1,961+00 to 1,989+50	215.0	165.0	2,850	50.0		1.75
1,989+50 to 1,997+00	165.0	165.0	750			
1,997+00 to 2,007+50	165.0	185.0	1,050	20.0	1.90	
2,007+50 to 2,018+00	185.0	164.0	1,050	21.0		2.00
2,018+00 to 2,028+00	164.0	164.0	1,000			
2,028+00 to 2,059+00	164.0	181.0	3,100	17.0	.55	
2,059+00 to 2,062+30	181.0	181.0	330			
2,062+30 to 2,091+30	181.0	196.0	2,900	15.0	.52	
2,091+30 to 2,102+00	196.0	180.0	1,070	16.0		1.50
2,102+00 to 2,128+00	180.0	190.0	2,600	10.0	.38	
2,128+00 to 2,145+60	190.0	164.0	1,780	26.0		1.48
2,145+60 to 2,163+00	164.0	175.0	740	11.0	1.49	
2,163+00 to 2,171+00	175.0	165.0	1,800	10.0		.55
2,171+00 to 2,194+30	165.0	130.0	2,330	35.0		1.50
2,194+30 to 2,223+00	130.0	130.0	2,870			
2,223+00 to 2,247+80	130.0	155.0	2,480	25.0	1.01	
2,247+80 to 2,254+00	155.0	155.0	620			
2,254+00 to 2,266+60	155.0	130.0	1,280	25.0		1.98
2,266+60 to 2,321+00	130.0	130.0	5,440			

GRADIENT ABSTRACT.

Grade.	Number.	Distance.	Grade.	Number.	Distance.
		Feet.			Feet.
2.0 to 1.8 per cent.	12	16,605	0.6 to 0.4 per cent.	7	17,040
1.8 to 1.6 per cent.	4	11,295	0.4 to 0.2 per cent.	2	5,980
1.6 to 1.4 per cent.	12	13,610	0.2 to 0.0 per cent.	6	68,400
1.4 to 1.2 per cent.	3	2,600	0.0 to 0.0 per cent.	20	69,730
1.2 to 1.0 per cent.	5	12,860			
1.0 to 0.8 per cent.	3	5,200			
0.8 to 0.6 per cent.	3	8,800	Total	77	232,100

APPENDIX 9.—*Gradient table, Iloilo-Cápiz-Batan Railway—Continued.*

PART C.—SECTION: CÁPIZ-BILAO.

Stations.	Grade points (elevations).		Dis- tance.	Eleva- tion.	Per cent.	
					Plus.	Minus.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>		
0+00 to 20+00.....	15	33	2,000	18	0.90	
20+00 to 40+00.....	33	19	2,000	14		0.70
40+00 to 60+00.....	19	30	2,000	11	.55	
60+00 to 80+00.....	30	15	2,000	15		.75
80+00 to 103+40.....	15	15	2,340			
103+40 to 127+00.....	15	50	2,380	35	1.48	
127+00 to 147+00.....	50	30	2,000	20		1.00
147+00 to 176+80.....	30	30	2,980			
176+80 to 190+00.....	30	40	1,320	10	.76	
190+00 to 220+00.....	40	25	3,000	15		.50
220+00 to 232+00.....	25	25	1,200			
232+00 to 263+00.....	25	50	3,100	25	.81	
263+00 to 290+00.....	50	50	2,700			
290+00 to 298+00.....	50	58	800	8	1.00	
298+00 to 317+00.....	58	58	1,800			
317+00 to 339+00.....	58	102	2,200	44	2.00	
339+00 to 360+00.....	102	81	2,100	21		1.00
360+00 to 420+00.....	81	45	6,000	36		.60
420+00 to 441+50.....	45	45	2,150			
441+50 to 460+00.....	45	30	1,850	15		.81
460+00 to 470+00.....	30	25	1,000	5		.50
470+00 to 510+00.....	25	25	4,000			
510+00 to 530+00.....	25	30	2,000	5	.25	
530+00 to 582+20.....	30	87	5,220	57	1.09	
582+20 to 590+00.....	87	73	780	14		1.80
590+00 to 600+00.....	73	53	1,000	20		2.00
600+00 to 634+40.....	53	25	3,440	28		.81
634+40 to 680+00.....	25	25	4,560			
680+00 to 700+00.....	25	20	2,000	5		.25
700+00 to 713+00.....	20	33	1,300	13	1.00	
713+00 to 726+50.....	33	20	1,350	13		.96
726+50 to 750+00.....	20	15	2,350	5		.21
750+00 to 808+00.....	15	15	5,800			
808+00 to 814+00.....	15	27	600	12	2.00	
814+00 to 820+00.....	27	18	600	9		1.50
820+00 to 853+20.....	18	18	1,520			
853+20 to 840+00.....	18	20	480	2	.42	
840+00 to 870+00.....	20	20	3,000			
870+00 to 890+00.....	20	10	2,000	10		.50
890+00 to 922+00.....	10	10	3,200			
922+00 to 940+00.....	10	28	1,800	18	1.00	
940+00 to 941+00.....	28	28	100			

GRADIENT ABSTRACT.

Grade.	Number.	Distance.	Grade.	Number.	Distance.
		<i>Feet.</i>			<i>Feet.</i>
2.0 to 1.8 per cent.....	3	7,240	0.6 to 0.4 per cent.....	4	11,480
1.8 to 1.6 per cent.....	1	780	0.4 to 0.2 per cent.....	2	6,350
1.6 to 1.4 per cent.....	2	2,960	0.2 to 0.0 per cent.....	12	35,450
1.4 to 1.2 per cent.....			0.0 to 0.0 per cent.....		
1.2 to 1.0 per cent.....	1	5,220			
1.0 to 0.8 per cent.....	7	16,300	Total.....	38	94,100
0.8 to 0.6 per cent.....	6	8,320			

PART D.—SECTION: CÁPIZ-DAO.

Stations.	Grade points (elevations).		Dis- tance.	Eleva- tion.	Per cent.	
					Plus.	Minus.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>		
0+00 to 23+00.....	30.5	19.0	2,300	11.50		0.50
23+00 to 90+00.....	19.0	19.0	6,700			
90+00 to 250+00.....	19.0	31.0	16,000	12.00	0.75	
250+00 to 340+00.....	31.0	31.0	9,000			
340+00 to 400+00.....	31.0	40.0	6,000	9.00	.15	
400+00 to 490+00.....	40.0	40.0	9,000			
490+00 to 620+00.....	40.0	53.0	13,000	13.00	.10	
620+00 to 688+00.....	53.0	53.0	6,800			
688+00 to 704+00.....	53.0	45.0	1,600	8.00		.50

APPENDIX 9.—*Gradient table, Iloilo-Cápiz-Batan Railway—Continued.*

GRADIENT ABSTRACT.

Grade.	Number.	Distance.	Grade.	Number.	Distance.
		<i>Feet.</i>			<i>Feet.</i>
2.0 to 1.8 per cent.....			0.6 to 0.4 per cent.....	2	3,900
1.8 to 1.6 per cent.....			0.4 to 0.2 per cent.....		
1.6 to 1.4 per cent.....			0.2 to 0.0 per cent.....	2	19,000
1.4 to 1.2 per cent.....			0.0 to 0.0 per cent.....	4	31,500
1.2 to 1.0 per cent.....			Total.....	9	70,400
1.0 to 0.8 per cent.....					
0.8 to 0.6 per cent.....	1	16,000			

APPENDIX 10.—*Grading quantities.*

PART A.—SECTION: ILOILO-PASSI.

[36 miles.]

Cut.				Fill.	Cut.				Fill.
	Hard rock.	Loose rock.	Earth.			Hard rock.	Loose rock.	Earth.	
	<i>Cu.yds.</i>	<i>Cu.yds.</i>	<i>Cu.yds.</i>	<i>Cu.yds.</i>		<i>Cu.yds.</i>	<i>Cu.yds.</i>	<i>Cu.yds.</i>	<i>Cu.yds.</i>
1 mile.....				13,425	19 miles.....				12,676
2 miles.....				9,700	20 miles.....			350	12,335
3 miles.....				4,413	21 miles.....			8,279	8,149
4 miles.....				13,502	22 miles.....				10,910
5 miles.....				7,602	23 miles.....			4,655	5,159
6 miles.....				10,006	24 miles.....			688	11,649
7 miles.....			35	7,432	25 miles.....				11,000
8 miles.....				7,452	26 miles.....	12,073		8,851	22,174
9 miles.....				11,164	27 miles.....			1,928	9,721
10 miles.....				9,972	28 miles.....			7,189	10,060
11 miles.....			12,735	8,044	29 miles.....			4,760	6,905
12 miles.....			1,752	31,167	30 miles.....	13,332		6,456	25,069
13 miles.....	14,434		4,973	26,167	31 miles.....		33,450	739	31,741
14 miles.....	5,128		13,938	16,522	32 miles.....			20,928	30,507
15 miles.....	11,828		9,983	22,466	33 miles.....	257		8,360	8,944
16 miles.....			5,265	19,752	34 miles.....	4,557		27,016	20,812
17 miles.....			1,495	8,755	35 miles.....				40,448
18 miles.....				6,027	36 miles.....				65,408

PART B.—SECTION: BATAN-PASSI.

[43.76 miles.]

1 mile.....			100	20,446	24 miles.....			1,308	18,301
2 miles.....			9,219	16,427	25 miles.....			4,930	19,986
3 miles.....			5,834	17,010	26 miles.....			13,843	34,659
4 miles.....			1,874	38,425	27 miles.....				6,483
5 miles.....			8,119	15,515	28 miles.....				16,253
6 miles.....			13,168	7,859	29 miles.....			478	20,094
7 miles.....	4,984		9,511	24,219	30 miles.....			1,826	13,236
8 miles.....	20,521			12,948	31 miles.....			10,697	17,603
9 miles.....	16,289			21,049	32 miles.....				17,412
10 miles.....				23,258	33 miles.....				9,532
11 miles.....			10,494	36,900	34 miles.....		7,815	3,978	11,704
12 miles.....			3,521	33,973	35 miles.....		29,220		20,301
13 miles.....	60,216			39,204	36 miles.....		15,255		10,495
14 miles.....	14,949			22,922	37 miles.....		21,134		28,152
15 miles.....	8,631		280	26,081	38 miles.....			17,242	21,940
16 miles.....				19,988	39 miles.....	9,550	11,772		26,759
17 miles.....				26,256	40 miles.....		8,028	31,180	36,058
18 miles.....				26,544	41 miles.....			27,010	15,651
19 miles.....				25,950	42 miles.....			16,451	25,025
20 miles.....				26,385	43 miles.....			24,707	14,372
21 miles.....				26,865	44 miles, less 323 feet.....			3,415	54,451
22 miles.....			5,120	26,814					
23 miles.....				18,258					

APPENDIX 10.—Grading quantities—Continued.

PART C.—SECTION CÁPÍZ-BILAO.

[17.83 miles.]

Cut.				Fill.	Cut.				Fill.
	Hard rock.	Loose rock.	Earth.			Hard rock.	Loose rock.	Earth.	
	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>		<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>
1 mile.....			13,374	24,428	11 miles.....			15,341	12,968
2 miles.....	10,418		9,158	23,658	12 miles.....			26,050	25,141
3 miles.....			17,036	13,083	13 miles.....			4,797	22,064
4 miles.....			10,905	25,477	14 miles.....			10,454	33,278
5 miles.....			5,347	15,663	15 miles.....			1,302	17,246
6 miles.....			15,262	19,777	16 miles.....	2,306	944	3,388	15,379
7 miles.....	12,189		12,308	21,305	17 miles.....			21,740	20,422
8 miles.....			31,118	26,758	18 miles, less 940 feet.....			2,475	57,808
9 miles.....			25,964	31,964					
10 miles.....			1,564	22,257					

PART D.—SECTION CÁPÍZ-DAO.

[13.34 miles.]

1 mile.....			142	23,926	9 miles.....				49,382
2 miles.....			6,080	22,629	10 miles.....			72	12,508
3 miles.....				28,388	11 miles.....			1,104	25,421
4 miles.....			4,554	9,394	12 miles.....				46,378
5 miles.....				14,241	13 miles.....				39,728
6 miles.....				30,930	13 miles, plus 1,440 feet.....				8,943
7 miles.....			240	25,081					
8 miles.....				20,380					

RECAPITULATION.

[Quantities based on roadway 14 feet wide on embankment, slopes $1\frac{1}{2}$ to 1; quantities based on roadway 18 feet wide on cuts, slopes $1\frac{1}{2}$ to 1.]

Section.	Hard rock.		Loose rock.		Earth.	
	Cubic yards.	Price per unit.	Cubic yards.	Price per unit.	Cubic yards.	Price per unit.
Iloilo-Passi.....	61,609	\$1.00	33,450	\$0.50	150,373	\$0.25
Batan-Passi.....	135,140	1.00	93,224	.50	243,259	.25
Cápiz-Bilao.....	24,913	1.00	944	.50	227,568	.25
Cápiz-Dao.....					12,192	.25

Section.	Fill.		Excess fill.		Total cost.
	Cubic yards.	Price per unit.	Cubic yards.	Price per unit.	
Iloilo-Passi.....	557,243		311,811	\$0.25	\$193,880
Batan-Passi.....	991,763		520,140	.25	372,602
Cápiz-Bilao.....	428,696		175,251	.25	128,095
Cápiz-Dao.....	359,319		327,127	.25	89,830

Total for grading, \$782,407.

AVERAGE PER MILE.

Section.	Hard rock.	Loose rock.	Earth.	Excess fill.	Cost.
	<i>Cubic yds.</i>	<i>Cubic yds.</i>	<i>Cubic yds.</i>	<i>Cubic yds.</i>	
Iloilo-Passi.....	1,711	929	4,177	8,661	\$5,386
Batan-Passi.....	3,088	2,130	5,559	11,886	8,515
Cápiz-Bilao.....	1,397	53	12,164	9,829	7,072
Cápiz-Dao.....			913	26,021	6,734

APPENDIX 11.—*Bridge abstracts, Iloilo-Cápiz-Batan Railway.**

[The following types of structures are adopted: Reinforced concrete culverts for all spans not greater than 18 feet. Open top I-beam and plate girder bridges for all spans from 20 to 80 feet. Pin-connected Pratt truss bridges or riveted girder bridges for spans above 80 feet. Estimates based on the following data: 1-3-6 concrete, \$8 per cubic yard in place; steel, \$0.05 per pound in place; stone masonry, \$10 per cubic yard in place. Reinforced concrete culverts designed with flat tops, uniform load 2,000 pounds per square foot, safety factor 4 at end of forty-five days (Hatt's formulas); footings 3 feet deep; bearing power of soil, 1 ton per square foot. Quantities of steel figured from Northern Pacific Railway standard bridges (1902). Piers and abutments to have top dimensions 5 by 20 feet; batter, 1 to 12. Footings, 5 feet deep; bearing power of soil, 1 ton per square foot. Quantities from Baker. All costs are in gold.]

PART A.—MAIN LINE: SECTION ILOILO-PASSI.

Length of span.	Total spans.	Water-way.	Type of structure.
		<i>Ltn. feet.</i>	
2 feet.....	1	3	Reinforced concrete.
3 feet.....	9	36	Do.
4 feet.....	112	560	Do.
5 feet.....	36	216	Do.
6 feet.....	4	24	Do.
7 feet.....	17	136	Do.
8 feet.....	31	310	Do.
10 feet.....	7	84	Do.
12 feet.....	11	165	Do.
15 feet.....	1	16	Do.
16 feet.....	8	160	Open top I-beam.
20 feet.....	1	25	Do.
25 feet.....	1	40	Do.
40 feet.....	1	50	Plate girder.
45 feet.....	1	96	Do.
50 feet.....	2	125	Riveted girder.
96 feet.....	1	230	Do.
125 feet.....	1	285	Pin-connected truss.
230 feet.....	1	300	Pin-connected truss 1 to 125 feet, 1 to 160 feet.
285 feet.....	1	300	Pin-connected truss 2 to 150 feet.
300 feet.....	2	850	Pin-connected truss 1 to 200 feet, 1 to 225 feet.
425 feet.....	1	600	Pin-connected truss 3 to 200 feet.
600 feet.....			
Total.....	249	4,440	

Distance, 35.99 miles; average waterway per mile, 123.3; total estimated cost, \$521,395; details follow.

Station.	Type of structure.	Span.	Materials.		Total cost.
			Masonry.	Steel.	
		<i>Feet.</i>	<i>Yards.</i>	<i>Pounds.</i>	
6	Reinforced concrete.....	6	67.5	500	\$570
10	do.....	4	34.0	220	284
15	do.....	5	50.0	220	411
20	do.....	5	50.0	220	411
25	do.....	5	40.0	220	331
30	do.....	5	50.0	220	411
35	do.....	5	50.0	220	411
40	do.....	5	45.0	220	371
45	do.....	5	50.0	220	411
50	do.....	5	50.0	220	411
55	do.....	5	50.0	220	411
60	do.....	5	50.0	220	411
65	do.....	5	45.0	220	371
71	do.....	5	50.0	220	411
75	do.....	5	50.0	220	411
80	do.....	5	50.0	220	411
85	do.....	5	45.0	220	371
ILOILO RIVER.					
93	200 to 225 foot truss.....	425	1,350.0	900,000	58,500
100	Reinforced concrete.....	5	45.0	220	371
110	do.....	5	40.0	220	331
115	do.....	5	40.0	220	331
120	do.....	5	40.0	220	331
125	do.....	5	40.0	220	331
130	do.....	5	40.0	220	331
135	do.....	5	40.0	220	331
140	do.....	5	40.0	220	331
145	do.....	5	40.0	220	331
150	do.....	5	40.0	220	331

* All structures for maintaining openings through the embankment are classified as bridges.

APPENDIX 11.—*Bridge abstracts, Iloilo-Capiz-Batan Railway—Continued.*

PART A.—MAIN LINE: SECTION: ILOILO-PASSI—Continued.

Sta- tion.	Type of structure.	Span.	Materials.			Total cost.
			Masonry.	Steel.		
ILOILO RIVER—continued.						
		Feet.	Yards.	Pounds.		
155	Reinforced concrete	5	40.0	220		\$331
160	do	5	40.0	220		331
165	do	5	40.0	260		338
170	do	5	40.0	360		338
175	do	5	50.0	360		418
180	do	5	50.0	360		418
185	do	5	55.0	420		461
190	do	5	50.0	360		418
195	do	6	65.0	500		545
202	do	4	30.0	220		251
205	do	5	40.0	360		338
210	do	5	40.0	360		338
215	do	5	40.0	360		338
220	do	5	40.0	360		338
225	do	5	40.0	360		338
230	do	5	45.0	360		378
235	do	5	40.0	360		338
240	do	5	40.0	360		338
246	do	5	45.0	360		378
250	do	5	38.0	360		322
255	do	5	38.0	360		322
260	do	5	40.0	360		338
267	Plate girder	40	310.0	40,000		5,100
279	Reinforced concrete	5	38.0	360		322
285	do	5	38.0	360		322
297	do	10	100.0	1,300		818
305	do	5	45.0	360		378
310	do	5	40.0	360		338
315	do	5	40.0	360		338
319	do	5	45.0	360		378
323	do	4	30.0	220		251
330	do	5	45.0	360		378
335	do	5	45.0	360		378
340	do	5	40.0	360		338
345	do	5	35.0	360		298
350	do	5	35.0	360		298
356	do	5	35.0	360		298
PAVIA RIVER.						
365	2 150-foot spans	300	587.0	500,000		30,870
375	Reinforced concrete	5	40.0	360		338
380	do	5	45.0	360		378
385	do	5	40.0	360		338
390	do	5	40.0	360		338
395	do	5	30.0	360		258
400	do	5	35.0	360		298
405	do	5	35.0	360		298
410	do	5	35.0	360		298
415	do	5	35.0	360		298
420	do	5	40.0	360		338
425	do	5	35.0	360		298
430	do	5	40.0	360		338
435	do	5	40.0	360		338
440	do	5	40.0	360		338
445	do	5	40.0	360		338
450	do	5	40.0	360		338
455	do	5	35.0	360		298
460	do	5	40.0	360		338
465	do	5	45.0	360		378
470	do	5	45.0	360		378
475	do	5	40.0	360		338
480	do	5	35.0	360		298
485	do	5	40.0	360		338
490	do	5	35.0	360		298
500	do	5	40.0	360		338
505	do	5	40.0	360		338
510	do	5	45.0	360		378
515	do	5	40.0	360		338
520	do	5	40.0	360		338
525	do	5	40.0	360		338
530	do	5	45.0	360		378
535	do	5	45.0	360		378
540	do	5	50.0	360		418
545	do	5	50.0	360		418
550	do	5	45.0	360		378
560	do	5	35.0	360		298
570	do	5	35.0	360		298
585	do	8	67.5	850		583
594	do	6	96.0	840		730

APPENDIX 11.—*Bridge abstracts, Iloilo-Capiz-Batan Railway—Continued.*

PART A.—MAIN LINE: SECTION ILOILO-PASSI—Continued.

Station.	Type of structure.	Span.	Materials.			Total cost.
			Masonry.	Steel.		
MAASIN RIVER.						
		Feet.	Yards.	Pounds.		
603	Truss, 200 to 225 feet.	425	980.0	900,000		\$54,800
613	Reenforced concrete	4	40.0	320		336
635	do.	5	35.0	360		268
640	do.	5	40.0	360		338
645	do.	5	50.0	360		418
650	do.	5	50.0	360		418
655	do.	5	60.0	500		505
660	do.	5	45.0	360		378
664	Plate girder	20	400.0	6,000		4,300
670	Reenforced concrete	5	45.0	360		378
686	Plate girder	20	420.0	6,000		4,500
697	Reenforced concrete	8	60.0	850		523
709	do.	12	125.0	1,900		1,095
723	do.	15	128.0	2,600		1,130
750	Plate girder	25	648.0	10,000		6,980
767	do.	20	600.0	6,000		6,300
769	Reenforced concrete	5	105.0	1,200		900
786	do.	6	68.0	500		569
ALICON RIVER.						
795	Truss	125	570.0	190,000		15,200
805	Plate girder	50	640.0	58,000		9,300
810	Reenforced concrete	6	111.0	1,400		958
815	do.	6	85.0	800		720
820	do.	6	85.0	800		720
831	do.	15	196.0	4,400		1,788
845	do.	10	100.0	1,300		865
856	do.	12	120.0	1,900		1,055
BANBAN RIVER.						
862	Plate girder	50	730.0	58,000		10,200
870	Reenforced concrete	5	35.0	360		298
880	do.	5	30.0	360		258
890	do.	5	35.0	360		298
JANIPAAN RIVER.						
896	Truss	125	910.0	190,000		18,600
901	Reenforced concrete	3	28.0	160		232
907	do.	6	50.0	500		425
913	do.	6	45.0	500		385
919	do.	6	45.0	500		385
925	do.	6	45.0	500		385
931	do.	6	50.0	500		425
937	do.	6	50.0	500		425
945	do.	8	70.0	850		602
949	do.	4	34.0	220		283
960	do.	10	108.0	1,300		929
970	do.	10	108.0	1,300		929
980	do.	10	100.0	1,300		865
990	do.	10	100.0	1,300		865
996	do.	16	130.0	4,000		1,240
1006	do.	10	70.0	1,300		625
1017	do.	10	70.0	1,300		625
1031	do.	15	110.0	2,600		1,010
1042	do.	12	95.0	1,900		855
1051	do.	8	50.0	850		443
1061	do.	10	80.0	1,300		705
1068	Plate girder	20	210.0	6,000		2,400
1074	Reenforced concrete	6	63.0	500		529
1086	do.	12	130.0	1,900		1,135
1091	do.	5	30.0	360		258
1106	do.	15	100.0	2,600		930
1116	do.	10	60.0	1,300		545
1125	do.	8	60.0	850		522
1130	do.	5	45.0	360		378
1140	do.	10	80.0	1,300		705
1150	do.	10	70.0	1,300		625
1160	do.	10	70.0	1,300		625
SUAGI RIVER.						
1175	160 to 125 feet.	285	788.0	470,000		31,380
1189	Reenforced concrete	10	115.0	1,300		965
1201	do.	12	100.0	1,900		895
1214	do.	12	100.0	1,900		895
BANGAI RIVER.						
1226	Truss	96	580.0	170,000		14,300
1234	Reenforced concrete	8	604.0	850		522
1242	do.	8	70.0	850		603

APPENDIX 11.—*Bridge abstracts, Iloilo-Capiz-Batan Railway—Continued.*

PART A.—MAIN LINE: SECTION ILOILO-PASSI—Continued.

Station.	Type of structure.	Span.	Materials.		Total cost.
			Masonry.	Steel.	
		<i>Feet.</i>	<i>Yards.</i>	<i>Pounds.</i>	
BANGAI RIVER—continued.					
1252	Reinforced concrete	10	80.0	1,300	\$705
1262	do	10	70.0	1,300	625
1272	do	10	70.0	1,300	625
1278	do	6	45.0	500	385
1286	do	8	50.0	850	443
1292	do	6	40.0	500	345
1300	do	8	70.0	850	603
1308	do	8	60.0	850	522
1318	do	10	70.0	1,300	625
1328	do	6	93.0	900	769
1347	do	10	80.0	1,300	705
1350	Plate girder	20	350.0	6,000	3,800
1359	Reinforced concrete	8	65.0	850	563
1364	do	6	55.0	500	465
1369	do	4	25.0	220	211
1376	do	7	70.0	600	590
1383	do	7	55.0	600	470
1389	do	6	50.0	500	425
1395	do	6	50.0	500	425
1401	do	6	50.0	500	425
1407	do	6	50.0	500	425
1413	do	6	50.0	500	425
1419	do	6	50.0	500	425
1425	do	6	50.0	500	425
1431	do	6	50.0	500	425
1437	do	6	50.0	500	425
1443	do	6	55.0	500	465
1449	do	6	55.0	500	465
1457	do	8	65.0	850	563
1465	do	8	77.0	850	658
1475	do	10	70.0	1,300	625
1481	do	6	30.0	500	465
1485	do	4	40.0	320	336
1494	Plate girder	20	310.0	6,000	3,400
1505	Reinforced concrete	10	70.0	1,300	625
1513	do	8	60.0	850	523
1520	do	7	70.0	850	602
1536	do	8	108.0	1,600	944
1543	do	5	40.0	360	338
1553	do	10	70.0	1,300	625
1563	do	10	150.0	2,500	1,325
1578	do	12	170.0	3,500	1,535
1584	do	7	65.0	850	563
1590	do	5	70.0	680	594
1596	do	6	118.0	1,400	1,014
1600	do	4	88.0	1,100	759
1614	do	15	240.0	6,100	2,225
1619	do	5	125.0	1,600	1,080
1623	do	4	37.0	280	310
1632	do	8	210.0	4,100	1,885
1634	Plate girder	20	688.0	6,000	5,404
1646	Reinforced concrete	15	240.0	6,100	2,225
1664	do	15	185.0	3,800	1,670
ULIAN RIVER.					
1675	Truss	225	535.0	500,000	30,350
1686	Reinforced concrete	15	100.0	2,600	930
1695	do	15	100.0	2,600	930
1708	do	6	40.0	850	363
1714	do	6	40.0	850	362
1721	do	8	100.0	1,400	870
1728	do	6	40.0	500	345
1758	do	15	198.0	4,400	1,804
1762	do	6	80.0	700	595
1768	Plate girder	20	310.0	6,000	3,400
1780	do	10	110.0	1,300	945
1799	Reinforced concrete	15	330.0	9,600	3,120
1810	do	10	80.0	1,300	705
1820	do	10	85.0	1,300	745
1830	do	10	75.0	1,300	665
1840	do	10	75.0	1,300	665
1850	do	10	75.0	1,300	665
1860	do	10	75.0	1,300	665
1870	do	10	90.0	1,300	785
JALAU RIVER.					
1994	3 200-foot trusses	600	2,455.0	1,200,000	84,550
	Total				528,771

APPENDIX 11.—*Bridge abstracts, Iloilo-Capiz-Batan Railway—Continued.*

PART B.—SECTION BATAN-PASSI.

Length of span.	Total spans.	Waterway. <i>Ltn. ft.</i>	Type of structure.
2 feet.....	1	2	Reinforced concrete.
3 feet.....	10	30	Do.
4 feet.....	125	500	Do.
5 feet.....	88	440	Do.
6 feet.....	23	138	Do.
8 feet.....	48	384	Do.
10 feet.....	42	420	Do.
12 feet.....	9	108	Do.
15 feet.....	10	150	Do.
18 feet.....	2	36	Do.
20 feet.....	2	40	Open top I-beam.
25 feet.....	2	50	Do.
30 feet.....	6	180	Do.
40 feet.....	3	120	Do.
90 feet.....	1	90	Riveted truss.
110 feet.....	1	110	Do.
120 feet.....	1	120	Do.
125 feet.....	1	125	Pin-connected truss.
150 feet.....	1	150	Do.
165 feet.....	1	165	Do.
175 feet.....	1	175	Do.
250 feet.....	2	500	Do.
Total.....	390	4,033	

Distance, 43.76 miles; average waterway per mile, 92.2; total estimated cost, \$508,849. Details follow.

Station.	Type of structure.	Span.	Materials.		Total cost.
			Masonry.	Steel.	
		<i>Feet.</i>	<i>Yards.</i>	<i>Pounds.</i>	
0-49+00	Reinforced concrete.....	49 at 4	1,862.0	29,400	\$16,266
51-59	do.....	4	38.0	600	2,672
64-77	do.....	4	38.0	600	4,342
106	do.....	10	95.0	1,300	625
119	do.....	4	40.0	320	336
122	do.....	4	38.0	280	318
125	do.....	4	40.0	320	336
131	do.....	6	55.0	500	465
143	do.....	5	90.0	1,300	785
155	do.....	4	48.0	400	404
165	do.....	4	48.0	400	404
176	Truss (Agbalili River).....	175	1,038.0	325,000	26,630
204	Reinforced concrete.....	12	148.0	2,700	1,319
220	Truss (Agbalili River).....	150	730.0	250,000	19,800
229	Reinforced concrete.....	4	43.0	360	262
249	do.....	15	150.0	2,600	1,330
279	do.....	15	120.0	2,600	1,090
285	do.....	18	200.0	4,100	1,805
304	do.....	12	100.0	1,900	895
308	do.....	4	35.0	200	290
317	do.....	8	100.0	1,400	870
322	do.....	6	85.0	820	721
336	do.....	10	150.0	1,200	1,320
346	do.....	15	135.0	2,600	1,210
352	do.....	15	240.0	6,000	2,220
357	do.....	15	180.0	3,200	1,600
369	Plate girder.....	25	270.0	10,000	3,200
376	Reinforced concrete.....	12	115.0	1,900	1,015
382	do.....	12	90.0	1,900	815
392	do.....	12	105.0	1,900	935
401	do.....	15	170.0	3,200	1,520
405	do.....	15	170.0	3,200	1,520
411	do.....	4	30.0	200	250
423	do.....	12	180.0	3,800	1,630
427	Plate girder.....	30	400.0	14,000	4,700
432	do.....	20	150.0	6,000	1,800
450	Reinforced concrete.....	8	70.0	850	603
478	do.....	6	65.0	500	545
492	do.....	3	34.0	200	282
520	do.....	8	240.0	5,000	2,170

* On account of having to provide for the passage of tide water between these stations a 4-foot culvert is placed every 100 feet, thus allowing 18 square feet of waterway per station.

APPENDIX 11.—*Bridge abstracts, Iloilo-Cápiz-Batan Railway—Continued.*

PART B.—SECTION BATAN-PASSI—Continued.

Station.	Type of structure.	Span.	Materials.			Total cost.
			Masonry.		Steel.	
			Feet.	Yards.	Pounds.	
525	Plate girder.....	30		270.0	14,000	\$3,400
555	.....do.....	30		240.0	14,000	3,100
560	.....do.....	40		200.0	40,000	3,000
579	Reenforced concrete.....	4		55.0	560	468
587	.....do.....	4		43.0	360	362
592	.....do.....	4		43.0	360	362
600	.....do.....	4		38.0	280	318
607	.....do.....	15		130.0	2,600	1,270
615	.....do.....	4		30.0	200	250
619	.....do.....	4		40.0	300	335
625	Plate girder.....	40		800.0	40,000	a 10,000
635	Reenforced concrete.....	4		38.0	280	318
639	.....do.....	4		58.0	600	494
644	.....do.....	4		75.0	900	648
646	.....do.....	4		88.0	1,100	759
648	.....do.....	4		91.0	1,160	779
651	.....do.....	4		30.0	200	250
654	.....do.....	4		53.0	500	449
660	.....do.....	8		300.0	3,500	2,575
673	.....do.....	18		1,270.0	24,000	b 11,360
683	.....do.....	4		40.0	320	336
688	.....do.....	4		61.0	560	516
697	.....do.....	4		49.0	440	414
702	.....do.....	4		70.0	800	600
706	.....do.....	4		64.0	700	547
709	.....do.....	3		50.0	400	420
711	.....do.....	4		58.0	600	494
717	.....do.....	5		48.0	360	402
722	.....do.....	4		55.0	550	468
726	.....do.....	4		46.0	360	386
730	.....do.....	3		50.0	400	420
734	.....do.....	2		25.0	200	210
739	.....do.....	4		70.0	800	600
745	.....do.....	3		61.0	500	513
747	.....do.....	3		61.0	500	513
748	.....do.....	4		91.0	1,140	785
754	.....do.....	3		70.0	800	590
766	.....do.....	6		62.0	500	521
775	.....do.....	8		70.0	850	602
781	.....do.....	5		48.0	360	402
786	.....do.....	5		48.0	360	402
790	.....do.....	4		34.0	220	283
795	.....do.....	5		48.0	360	402
800	.....do.....	6		62.0	500	521
825	Truss (Mambuso River).....	125		1,655.0	190,000	26,500
837	Reenforced concrete.....	6		62.0	500	521
843	.....do.....	5		50.0	360	418
849	.....do.....	6		62.0	500	521
855	.....do.....	4		34.0	220	283
860	.....do.....	4		32.0	220	283
865	.....do.....	5		48.0	360	402
869	.....do.....	4		34.0	220	283
873	.....do.....	4		34.0	220	283
879	.....do.....	5		48.0	360	402
885	.....do.....	6		58.0	500	499
891	.....do.....	6		58.0	500	499
897	.....do.....	5		48.0	360	378
902	.....do.....	4		34.0	220	283
908	.....do.....	5		46.0	360	386
914	.....do.....	5		46.0	360	386
919	.....do.....	4		34.0	220	283
925	.....do.....	5		48.0	360	402
932	.....do.....	6		62.0	500	521
937	.....do.....	5		48.0	360	402
942	.....do.....	5		48.0	360	402
948	.....do.....	4		34.0	220	283
953	.....do.....	5		48.0	360	402
958	.....do.....	4		34.0	220	283
965	.....do.....	8		70.0	850	602
973	.....do.....	6		62.0	500	521
979	.....do.....	4		34.0	360	290
987	.....do.....	4		34.0	360	290
996	.....do.....	8		70.0	850	603
1003	.....do.....	6		65.0	500	546

a Through a 28-foot fill; length of abutments, 102 feet.

b Through a 52-foot fill; length of culvert, 170 feet.

APPENDIX 11.—*Bridge abstracts, Iloilo-City-Batan Railway—Continued.*

PART B.—SECTION BATAN-PASSI—Continued.

Station.	Type of structure.	Span.	Materials.			Total cost.
			Masonry.	Steel.		
		Feet.	Yards.	Pounds.		
1008	Reinforced concrete	5	48.0	360		\$402
1016	do.	8	70.0	850		602
1022	do.	6	65.0	500		545
1030	do.	6	62.0	500		521
1035	do.	5	48.0	360		402
1040	do.	5	48.0	360		402
1045	do.	5	48.0	360		402
1050	do.	5	48.0	360		402
1055	do.	5	48.0	360		402
1060	do.	5	48.0	360		402
1065	do.	5	48.0	360		402
1070	do.	5	48.0	360		402
1075	do.	5	48.0	360		402
1080	do.	5	48.0	360		402
1085	do.	5	48.0	360		402
1090	do.	5	48.0	360		402
1095	do.	5	48.0	360		402
1100	do.	5	48.0	360		402
1105	do.	5	48.0	360		402
1110	do.	5	48.0	360		402
1115	do.	5	50.0	360		418
1123	Truss (Nabugan River)	110	444.0	180,000		13,440
1130	Reinforced concrete	5	45.0	420		381
1136	do.	6	96.0	840		730
1141	do.	5	55.0	420		461
1144	do.	3	44.0	300		370
1149	do.	5	70.0	660		568
1155	do.	6	62.0	500		521
1160	do.	5	45.0	360		378
1165	do.	5	42.0	360		354
1170	do.	5	42.0	360		354
1175	do.	5	55.0	420		461
1180	do.	5	50.0	360		418
1185	do.	5	48.0	360		402
1190	do.	5	48.0	360		402
1195	do.	5	48.0	360		402
1200	do.	5	50.0	360		418
1205	do.	5	48.0	360		402
1210	do.	5	50.0	360		418
1215	do.	5	48.0	360		402
1220	do.	5	50.0	360		418
1225	do.	5	50.0	360		418
1230	do.	5	48.0	360		402
1235	do.	5	48.0	360		402
1240	do.	5	48.0	360		402
1245	do.	5	48.0	360		402
1255	do.	5	40.0	360		338
1260	do.	5	48.0	360		402
1264	do.	5	47.0	400		366
1268	do.	4	52.0	500		341
1272	do.	4	46.0	400		386
1280	do.	10	92.0	1,300		801
1290	do.	10	102.0	1,300		881
1295	do.	5	48.0	360		402
1300	do.	5	40.0	360		338
1305	do.	5	40.0	360		338
1310	do.	5	40.0	360		338
1318	do.	8	180.0	3,300		1,605
1326	do.	10	125.0	1,700		1,185
1328	do.	8	148.0	2,400		1,304
1343	2 abutments (Panay River), 1 pier, 2 125-foot trusses.	250	1,800.0	380,000		37,000
1349	Reinforced concrete	5	48.0	360		402
1352	do.	4	48.0	460		407
1358	do.	6	65.0	500		545
1366	do.	8	60.0	850		523
1374	do.	8	60.0	850		522
1382	do.	8	60.0	850		523
1390	do.	8	60.0	850		522
1398	do.	8	60.0	850		523
1406	do.	8	60.0	850		522
1414	do.	8	60.0	850		523
1422	do.	8	70.0	850		602
1430	do.	8	73.0	850		627
1438	do.	8	70.0	850		602
1446	do.	8	70.0	850		603
1454	do.	8	77.0	850		658
1462	do.	8	60.0	850		523
1470	do.	8	60.0	850		522

APPENDIX 11.—*Bridge abstracts, Iloilo-Cipiz-Batan Railway—Continued.*

PART B.—SECTION BATAN-PASSI—Continued.

Station.	Type of structure.	Span.	Materials.		Total cost.
			Masonry.	Steel.	
		Feet.	Yards.	Pounds.	
1478	Reinforced concrete.....	8	70.0	850	\$603
1487	.....do.....	8	73.0	850	626
1491	Truss (Panay River), 2 abutments, 1 pier, 2 125-foot spans.....	250	1,850.0	390,000	37,500
1500	Reinforced concrete.....	5	50.0	360	418
1510	.....do.....	10	100.0	1,300	865
1520	.....do.....	10	90.0	1,300	785
1530	.....do.....	10	90.0	1,300	785
1536	.....do.....	5	45.0	360	378
1542	.....do.....	10	102.0	1,300	881
1545	.....do.....	5	43.0	360	362
1560	.....do.....	8	70.0	850	603
1570	.....do.....	10	90.0	1,300	785
1580	.....do.....	10	100.0	1,300	865
1593	.....do.....	15	130.0	2,600	1,170
1600	.....do.....	8	85.0	1,200	740
1613	.....do.....	12	126.0	1,900	1,103
1624	.....do.....	10	80.0	1,300	705
1630	.....do.....	6	58.0	500	489
1640	.....do.....	10	90.0	1,300	785
1650	.....do.....	10	90.0	1,300	785
1660	.....do.....	10	92.0	1,300	801
1670	.....do.....	10	92.0	1,300	801
1680	.....do.....	10	92.0	1,300	801
1690	.....do.....	10	90.0	1,300	785
1700	.....do.....	10	90.0	1,300	785
1710	.....do.....	10	90.0	1,300	785
1720	.....do.....	10	90.0	1,300	785
1730	.....do.....	10	90.0	1,300	785
1740	.....do.....	10	85.0	1,300	745
1746	Plate girder.....	40	150.0	40,000	1,700
1750	Reinforced concrete.....	10	85.0	1,300	745
1753	Plate girder.....	30	150.0	14,000	2,200
1757	Reinforced concrete.....	8	65.0	840	562
1767	.....do.....	15	155.0	2,600	1,370
1772	.....do.....	4	34.0	220	283
1778	.....do.....	25	180.0	10,000	2,300
1781	.....do.....	4	38.0	280	444
1786	.....do.....	8	77.0	850	659
1792	.....do.....	8	172.0	3,100	1,531
1798	.....do.....	8	260.0	3,800	2,270
1802	.....do.....	4	46.0	400	388
1804	.....do.....	4	103.0	1,100	879
1812	.....do.....	6	111.0	1,300	953
1828	.....do.....	8	60.0	850	522
1836	.....do.....	8	60.0	850	523
1844	.....do.....	8	65.0	850	562
1852	.....do.....	8	65.0	850	563
1860	.....do.....	8	60.0	850	522
1873	.....do.....	8	60.0	850	523
1879	.....do.....	5	40.0	360	338
1885	.....do.....	6	50.0	500	425
1888	.....do.....	5	135.0	1,700	1,165
1889	.....do.....	5	110.0	1,300	945
1892	.....do.....	10	215.0	3,900	1,915
1898	.....do.....	8	185.0	3,460	1,653
1900	.....do.....	4	70.0	800	600
1907	.....do.....	4	34.0	220	283
1916	.....do.....	10	145.0	2,200	1,270
1919	.....do.....	10	135.0	1,900	1,175
1921	.....do.....	10	145.0	2,200	1,270
1927	.....do.....	10	195.0	3,600	1,740
1928	.....do.....	10	173.0	2,800	1,524
1939	.....do.....	10	290.0	6,100	2,670
1943	.....do.....	10	109.0	1,300	837
1949	.....do.....	10	300.0	6,400	2,720
1952	.....do.....	10	225.0	4,500	2,025
1960	.....do.....	8	187.0	3,500	1,671
1967	.....do.....	8	155.0	2,700	1,375
1973	.....do.....	10	248.0	5,000	2,234
1978	.....do.....	5	55.0	420	650
1981	.....do.....	10	162.0	2,700	1,431
1987	.....do.....	10	112.0	1,300	961
1990	.....do.....	4	34.0	220	283
1995	.....do.....	6	74.0	600	622
1997	.....do.....	4	43.0	360	362
2001	.....do.....	6	74.0	600	622
2014	.....do.....	8	77.0	850	659

APPENDIX 11.—*Bridge abstracts, Iloilo-Capiz-Batan Railway—Continued.*

PART B.—SECTION BATAN-PASSI—Continued.

Station.	Type of structure.	Span.	Materials.		Total cost.
			Masonry.	Steel.	
		Feet.	Yards.	Pounds.	
2027	Truss (Mallao River)	90	580.0	142,000	\$12,000
2032	Reinforced concrete	5	45.0	360	378
2035	do	5	45.0	360	378
2040	do	5	90.0	980	769
2044	do	8	85.0	1,040	732
2051	Plate girder	30	700.0	14,000	7,700
2060	Truss (Mallao River)	120	1,500.0	190,000	24,500
2067	Reinforced concrete	10	112.0	1,300	961
2073	do	5	80.0	800	440
2079	do	3	73.0	600	614
2083	do	3	135.0	1,280	1,144
2085	do	3	140.0	1,320	1,186
2089	do	4	154.0	2,200	1,243
2093	do	8	265.0	7,400	2,957
2100	do	10	152.0	2,400	1,336
2107	do	8	85.0	1,000	730
2112	do	5	45.0	360	378
2140	do	10	100.0	1,300	865
2146	do	8	132.0	2,140	1,163
2158	do	12	120.0	1,300	1,025
2162	Plate girder	30	120.0	14,000	1,900
2180	Reinforced concrete	12	265.0	4,300	2,335
2185	do	5	115.0	1,200	980
2190	do	5	55.0	440	462
2195	do	5	45.0	360	378
2200	do	5	45.0	360	378
2205	do	5	45.0	360	378
2210	Truss (Lamanan River)	165	1,450.0	280,000	28,500
2216	Plate girder	20	210.0	6,000	2,400
2221	Reinforced concrete	5	50.0	360	418
2228	do	8	108.0	360	882
2235	do	8	164.0	2,700	1,447
2250	do	5	40.0	360	338
2260	do	10	90.0	1,300	785
2266	do	6	80.0	700	675
2271	do	5	75.0	740	637
2276	do	5	95.0	1,040	812
2280	do	4	46.0	600	398
2290	do	10	175.0	3,000	1,550
2295	do	5	130.0	1,600	1,120
2300	do	5	80.0	800	680
2305	do	5	65.0	600	550
2310	do	5	60.0	500	505
2315	do	5	60.0	500	505
Total					508,849

PART C.—SHORE LINE: SECTION CAPIZ-BILAO.

Span.	Total spans.	Waterway.	Type of structure.
		Ltn. feet.	
2 feet	8	16	Reinforced concrete.
3 feet	9	27	Do.
4 feet	63	252	Do.
5 feet	18	90	Do.
6 feet	9	54	Do.
8 feet	19	152	Do.
9 feet	1	9	Do.
10 feet	19	190	Do.
15 feet	7	105	Do.
20 feet	2	40	Open top I-beam.
25 feet	2	50	Do.
30 feet	6	180	Do.
35 feet	2	70	Do.
50 feet	1	50	Plate girder.
70 feet	1	70	Do.
80 feet	1	80	Do.
Total	168	1,435	

Distance, 17.84 miles; average waterway per mile, 80.5; total estimated cost, \$149,544. (Details follow.)

APPENDIX 11.—*Bridge abstracts, Noño-Cápiç-Batan Railway—Continued.*

PART C.—SHORE LINE: SECTION CÁPIZ-BILAO—Continued.

Sta- tion.	Type of structure.	Span.	Materials.		Total cost.
			Masonry.	Steel.	
		<i>Feet.</i>	<i>Yards.</i>	<i>Pounds.</i>	
6	Reinforced concrete.....	10	109.0	1,300	\$937
28	do.....	10	92.0	1,300	801
32	do.....	4	37.0	250	309
41	do.....	10	174.0	3,300	1,557
46	do.....	5	70.0	660	593
49	do.....	3	56.0	420	469
52	do.....	3	42.0	260	349
58	do.....	8	93.0	1,200	804
66	do.....	8	124.0	1,950	1,079
73	do.....	5	70.0	660	593
78	do.....	8	132.0	2,150	1,164
88	do.....	8	77.0	850	659
93	do.....	5	48.0	350	402
103	do.....	10	90.0	1,300	785
113	do.....	10	110.0	1,300	945
140	do.....	8	77.0	850	659
147	do.....	8	65.0	850	562
150	do.....	3	28.0	150	232
170	do.....	6	80.0	700	675
179	do.....	10	135.0	2,150	1,187
183	do.....	4	46.0	420	389
194	do.....	10	95.0	1,300	825
202	do.....	8	70.0	850	603
212	do.....	8	92.0	1,200	796
222	do.....	10	110.0	1,350	948
226	do.....	6	74.0	600	622
232	do.....	6	55.0	500	465
247	do.....	8	70.0	850	603
252	do.....	5	55.0	420	461
258	do.....	6	67.0	500	561
280	Plate girder.....	30	130.0	14,000	2,000
284	Reinforced concrete.....	4	40.0	320	336
288	do.....	5	55.0	420	461
289	do.....	2	22.0	150	184
292	do.....	3	42.0	260	349
306	do.....	8	133.0	2,150	1,172
309	do.....	3	47.0	320	392
319	Plate girder.....	30	130.0	14,000	2,700
320	Reinforced concrete.....	2	24.0	200	202
326	do.....	5	105.0	1,200	900
332	do.....	8	172.0	3,100	1,526
357	do.....	10	145.0	2,200	1,270
365	do.....	8	148.0	2,500	1,309
366	do.....	2	24.0	200	202
368	do.....	2	24.0	200	202
372	do.....	4	43.0	350	362
375	do.....	4	53.0	500	449
386	do.....	10	194.0	2,600	1,682
399	do.....	4	58.0	600	494
393	do.....	3	47.0	300	391
399	do.....	6	78.0	600	654
403	do.....	4	80.0	950	688
404	do.....	2	34.0	360	290
406	do.....	2	24.0	200	202
414	do.....	8	73.0	850	627
417	do.....	2	24.0	160	200
423	do.....	2	18.0	100	149
427	do.....	4	30.0	200	250
430	do.....	3	47.0	320	392
436	do.....	10	184.0	2,600	1,502
454	do.....	15	228.0	7,200	2,184
458	do.....	4	61.0	650	521
466	Plate girder.....	80	580.0	118,000	11,700
475	Reinforced concrete.....	5	55.0	420	461
481	do.....	5	55.0	420	461
487	do.....	5	50.0	350	418
493	do.....	5	55.0	420	461
497	Plate girder.....	70	385.0	91,000	9,400
503	Reinforced concrete.....	5	50.0	350	417
510	do.....	5	47.0	350	394
521	do.....	8	70.0	860	603
527	do.....	6	67.0	500	551
531	do.....	4	33.0	220	275
534	do.....	15	198.0	4,400	1,804
539	do.....	4	54.0	560	460
547	do.....	15	140.0	2,600	1,250
553	do.....	15	145.0	2,600	1,290
557	do.....	4	32.0	220	267
561	do.....	4	34.0	220	283

APPENDIX 11.—*Bridge abstracts, Iloilo-Cápiz-Batan Railway—Continued.*

PART C.—SHORE LINE: SECTION CÁPIZ-BILAO—Continued.

Station.	Type of structure.	Span.	Materials.		Total cost.
			Masonry.	Steel.	
		<i>Feet.</i>	<i>Yards.</i>	<i>Pounds.</i>	
564	Plate girder.....	20	220.0	6,000	\$2,060
566	Reenforced concrete.....	4	33.0	220	275
590	do.....	9	135.0	1,100	1,135
593	do.....	4	55.0	560	465
596	Plate girder.....	25	450.0	10,000	5,000
605	Reenforced concrete.....	10	124.0	1,700	1,077
622	do.....	10	162.0	3,000	1,446
633	do.....	10	90.0	1,300	785
TABLA RIVER.					
639	Plate girder.....	35	125.0	17,000	2,100
645	Reenforced concrete.....	5	59.0	500	497
651	Plate girder.....	30	160.0	14,000	2,300
657	Reenforced concrete.....	5	70.0	660	593
661	do.....	4	40.0	320	336
670	do.....	10	140.0	1,700	1,205
675	do.....	4	28.0	220	235
680	do.....	10	100.0	1,300	865
686	Plate girder.....	25	265.0	10,000	3,150
692	do.....	20	270.0	6,000	3,000
702	Reenforced concrete.....	15	153.0	2,600	1,354
708	do.....	6	105.0	1,200	900
716	do.....	8	70.0	850	603
721	do.....	15	135.0	2,600	1,210
727	do.....	15	150.0	2,600	1,330
740	do.....	3	24.0	160	200
744	Plate girder.....	35	125.0	17,000	2,100
748	Reenforced concrete.....	3	24.0	160	200
757	do.....	6	65.0	500	545
765	do.....	6	67.0	500	561
770	Plate girder.....	50	445.0	58,000	6,850
777	Reenforced concrete.....	8	70.0	850	602
781	do.....	8	70.0	850	603
791	do.....	10	90.0	1,300	785
801	do.....	10	94.0	1,300	817
804	Plate girder.....	30	160.0	14,000	2,300
810	Reenforced concrete.....	5	60.0	500	505
820	do.....	10	100.0	1,300	865
825	do.....	5	48.0	360	402
830	do.....	5	50.0	360	418
835	do.....	5	45.0	360	378
841	Plate girder.....	30	325.0	14,000	3,950
849	Reenforced concrete.....	8	140.0	2,360	1,238
870	Plate girder.....	30	185.0	14,000	2,550
874	Reenforced concrete.....	8	72.0	860	619
888					
934	1 4-foot reenforced concrete culvert every 100 feet.....	4	38.0	600	15,364
Total.....					149,544

PART D.—BRANCH LINE: SECTION CÁPIZ-DAO.

Span.	Total spans.	Water-way.	Type of structure.
		<i>Lin. ft.</i>	
3 feet.....	1	3	Reenforced concrete.
4 feet.....	8	32	Do.
5 feet.....	4	20	Do.
6 feet.....	39	234	Do.
8 feet.....	20	160	Do.
10 feet.....	17	170	Do.
12 feet.....	2	24	Do.
15 feet.....	2	30	Do.
20 feet.....	1	20	Open-top I-beam.
25 feet.....	2	50	Do.
30 feet.....	1	30	Do.
45 feet.....	2	90	Do.
60 feet.....	2	120	Do.
150 feet.....	1	150	Pin-connected truss.
Total.....	102	1,133	

Distance, 13.34 miles; average waterway per mile, 84.9; total estimated cost, \$127,487. Details follow.

APPENDIX 11.—*Bridge abstracts, Iloilo-Cápiz-Batan Railway—Continued.*

PART D.—BRANCH LINE: SECTION CÁPIZ-DAO—Continued.

Sta- tion.	Type of structure.	Span.	Materials.			Total cost.
			Masonry.	Steel.		
		Feet.	Yards.	Pounds.		
5	Reenforced concrete.	10	110.0	1,300		\$945
10	.....do.....	10	105.0	1,300		905
15	.....do.....	10	105.0	1,300		905
23	.....do.....	10	100.0	1,300		865
28	.....do.....	6	64.0	500		537
32	Plate girder.	25	145.0	10,000		3,400
38	Reenforced concrete.	10	95.0	1,300		825
46	.....do.....	8	72.0	850		619
52	.....do.....	6	67.0	500		561
58	.....do.....	6	67.0	500		561
64	.....do.....	6	67.0	500		561
70	.....do.....	6	74.0	600		622
77	Plate girder.	20	320.0	6,000		3,500
85	Reenforced concrete.	15	125.0	2,600		1,130
92	.....do.....	10	95.0	1,300		825
98	.....do.....	6	67.0	500		561
104	.....do.....	6	67.0	500		561
110	.....do.....	6	67.0	500		561
116	.....do.....	6	67.0	500		561
122	.....do.....	6	62.0	500		521
128	.....do.....	6	74.0	600		622
138	.....do.....	10	128.0	1,560		1,102
144	.....do.....	6	85.0	850		723
148	.....do.....	4	38.0	260		317
154	.....do.....	6	67.0	500		561
158	.....do.....	4	34.0	200		282
164	.....do.....	6	62.0	500		521
170	.....do.....	6	58.0	500		489
176	.....do.....	6	62.0	500		521
182	.....do.....	6	62.0	500		521
186	.....do.....	4	32.0	200		266
212	.....do.....	10	95.0	1,300		825
220	Plate girder.	60	325.0	73,000		3,900
230	Reenforced concrete.	10	110.0	1,300		945
237	.....do.....	8	77.0	850		658
245	Plate girder.	30	290.0	14,000		3,600
252	Reenforced concrete.	8	60.0	850		523
260	.....do.....	8	60.0	850		522
268	.....do.....	8	60.0	850		523
277	.....do.....	10	140.0	2,100		1,225
283	.....do.....	6	74.0	500		517
290	Plate girder.	45	400.0	50,000		6,500
296	Reenforced concrete.	6	74.0	600		622
302	.....do.....	6	65.0	500		545
307	.....do.....	5	64.0	600		542
312	.....do.....	15	180.0	3,200		1,600
322	.....do.....	10	125.0	1,700		1,085
328	.....do.....	6	65.0	500		545
334	.....do.....	6	62.0	500		521
341	.....do.....	8	60.0	850		523
347	.....do.....	6	62.0	500		521
CALIHAN RIVER.						
352	Plate girder.	45	290.0	50,000		5,400
359	Reenforced concrete.	6	65.0	500		545
366	.....do.....	8	117.0	1,800		1,026
372	.....do.....	6	74.0	600		622
378	.....do.....	6	77.0	500		641
384	.....do.....	6	56.0	500		473
392	.....do.....	8	73.0	850		627
398	.....do.....	6	62.0	500		521
402	.....do.....	4	30.0	200		250
410	.....do.....	8	70.0	850		603
416	.....do.....	6	67.0	500		561
420	.....do.....	4	34.0	200		282
426	.....do.....	6	80.0	700		675
436	.....do.....	10	172.0	3,000		1,526
BULANGA RIVER.						
447	Plate girder.	25	580.0	10,000		6,300
455	Reenforced concrete.	8	100.0	1,400		870
463	.....do.....	8	77.0	850		659
471	.....do.....	8	73.0	850		626
485	.....do.....	6	65.0	500		545
492	.....do.....	8	65.0	850		563
500	.....do.....	8	65.0	850		562
506	.....do.....	6	58.0	500		489
512	.....do.....	6	58.0	500		489
518	.....do.....	6	58.0	500		489

APPENDIX 11.—*Bridge abstracts, Iloilo-Cápiz-Batan Railway—Continued.*

PART D.—BRANCH LINE: SECTION CÁPIZ-DAO—Continued.

Station.	Type of structure.	Span.	Materials.			Total cost.
			Masonry.	Steel.		
BULANGA RIVER—continued.		Feet.	Yards.	Pounds.		
523	Reenforced concrete	5	45.0	360		\$378
530	do	8	77.0	850		659
536	do	6	65.0	500		545
542	do	6	65.0	500		545
550	do	8	60.0	850		523
554	do	4	32.0	200		266
558	do	5	65.0	600		550
562	do	4	34.0	200		282
566	do	4	38.0	260		317
DOYOG RIVER.						
569	Plate girder	60	720.0	73,000		10,850
578	Reenforced concrete	8	108.0	1,600		944
583	do	5	70.0	660		593
588	do	12	136.0	1,700		1,173
600	do	12	136.0	1,700		1,173
606	do	6	98.0	1,060		873
612	do	6	85.0	900		720
618	do	6	111.0	1,300		953
621	do	3	47.0	320		392
MAMBUSAO RIVER.						
626	Truss	150	850.0	250,000		21,000
636	Reenforced concrete	8	107.0	1,800		946
646	do	10	150.0	2,460		1,323
653	do	8	108.0	1,600		844
660	do	8	85.0	1,040		732
670	do	10	105.0	1,300		905
680	do	10	90.0	1,300		785
690	do	10	110.0	1,300		945
700	do	10	150.0	1,400		1,270
Total						127,487

APPENDIX 12.—*Track and ballast, Iloilo-Cápiz-Batan Railway.*

COST FOR 1 MILE.

Material required.	Unit.	Cost per unit.	Quantity per mile.	Total cost.
			<i>Tons.</i>	
Rail (70 pounds per yard)	Ton.	\$35.00	112	\$3,920.00
Joints	Pair, including bolts	1.50	352	528.00
Ties (16 per 30 feet of rail)	Each .....	.80	2,816	2,252.80
Spikes	do .....	.02	11,268	225.36
Labor laying				350.00
Gravel ballast	Cubic yard .....	.30	3,000	900.00
Total.				8,176.00

TOTAL COST OF SECTIONS.

Section.	Mileage.			Cost per mile.	Total cost.	Switches.	
	Roads.	Sidings.	Total.			No.	Cost.
Iloilo-Passi	35.99	4.45	40.44	\$8,176	\$330,637	26	\$3,900
Batan-Passi	43.76	3.12	46.88	8,176	383,291	22	3,300
Cápiz-Bilao	17.84	1.14	18.98	8,176	155,180	8	1,200
Cápiz-Dao	13.34	.57	13.91	8,176	113,728	4	600

Summary.

Iloilo-Passi	\$334,537
Batan-Passi	386,591
Cápiz-Bilao	156,380
Cápiz-Dao	114,328
Total for superstructure.	991,836

APPENDIX 13.—*Station buildings, Iloilo-Cápiz-Batan Railway.*

Town.	Type of building.	Cost.
SECTION ILOILO-PASSI.		
Iloilo.....	Terminal passenger.....	\$21,000
Do.....	Freight.....	10,100
La Paz.....	Small combination passenger and freight.....	3,500
Jaro.....	Large combination passenger and freight.....	9,500
Pavia.....	Small combination passenger and freight.....	3,500
Santa Bárbara.....	Large combination passenger and freight.....	9,500
Lucena.....	Small combination passenger and freight.....	3,500
Pototan.....	Large combination passenger and freight.....	9,500
Dingle.....	do.....	9,500
Dueñas.....	Small combination passenger and freight.....	3,500
Passi.....	do.....	3,500
	Total.....	86,600
SECTION BATAN-PASSI.		
Batan.....	Large combination passenger and freight.....	9,500
Jimeno.....	Small combination passenger and freight.....	3,500
Bilao.....	do.....	3,500
Mambusao.....	do.....	3,500
Sigma.....	do.....	3,500
Dao.....	do.....	3,500
Quartero.....	do.....	3,500
Dumarao.....	do.....	3,500
Passi.....	do.....	3,500
	Total.....	34,000
SECTION CÁPIZ-BILAO.		
Cápiz.....	Large combination passenger and freight.....	9,500
Ivisan.....	Small combination passenger and freight.....	3,500
Saplan.....	do.....	3,500
Bilao.....	do.....	3,500
	Total.....	16,500
SECTION CÁPIZ-DAO.		
Cápiz.....	Large combination passenger and freight.....	3,500
Loctugan.....	Small combination passenger and freight.....	3,500
Fanitan.....	do.....	3,500
Dao.....	do.....	3,500
	Total.....	7,000

For plans of railway stations see Nos. 25, 26, 27, and 28.

APPENDIX 14.—*Water tanks, Iloilo-Cápiz-Batan Railway.*

Location.	Capacity.	Style.	Cost.
	<i>Gallons.</i>		
Iloilo.....	50,000	Circular wooden..	\$2,000
Santa Bárbara.....	23,000	do.....	1,500
Pototan.....	23,000	do.....	1,500
Passi.....	23,000	do.....	1,500
Dumarao.....	23,000	do.....	1,500
Dao.....	50,000	do.....	2,000
Bilao.....	50,000	do.....	2,000
Batan.....	50,000	do.....	2,000
Cápiz.....	23,000	do.....	1,500
Total.....			15,500

Plan No. 24 shows design for standard water tank.

APPENDIX 15.—Coaling stations, Iloilo-Cápiz-Batan Railway.

Location.	Capacity.	Style.	Cost.
	<i>Tons.</i>		
Iollo.....	200	High trestle.....	\$5,000
Bilao.....	150	do.....	4,200
Batan.....	200	do.....	5,000
Cápiz.....	150	do.....	4,200
Total.....			18,400

APPENDIX 16.—Engine houses and shops, Iloilo-Cápiz-Batan Railway.

ENGINE HOUSES.

Location.	Capacity.	Style.	Cost.
Iollo.....	8 engines.....	Segmental.....	\$16,000
Batan.....	do.....	do.....	16,000
Cápiz.....	4 engines.....	Rectangular.....	8,000
Total.....			40,000

SHOPS.

Location.	Style.	Kind.	Cost.
Iollo.....	Rectangular, 40 by 160 feet.....	General repair....	\$40,000

APPENDIX 17.—Equipment abstract, Iloilo-Cápiz-Batan Railway.

Class.	Style.	Weight.	Capacity (passengers).	Number.	Cost per unit.	Total cost.
		<i>Tons.</i>	<i>Number.</i>			
Passenger and freight locomotives.....	Class C, 2.....	61		14	\$11,000	\$154,000
Switching locomotives.....	Class A, 2.....	52		2	7,000	14,000
Passenger cars.....	First class.....		50	8	3,500	28,000
Do.....	Second class.....		50	10	3,000	30,000
Do.....	Third class.....		64	32	1,600	51,200
Freight cars.....	Box.....	30		250	1,000	250,000
Do.....	Open.....	30		50	900	45,000
Do.....	Flat.....	30		30	800	24,000
Do.....	Cattle.....	30		12	1,000	12,000
Inspection cars.....				1	3,500	3,500
Wrecking cars.....	Crane.....			2	2,500	5,000
Total.....						616,700

APPENDIX 18.—*Right of way abstract, Iloilo-Cápiz-Batan Railway.*

	Area (in square feet).	Total area.		Price per hectare	Total cost.
		Square feet.	Equiva- lent in hectares.		
Section Iloilo-Passi:					
Right of way around Iloilo.....	900,000	1,513,000	14.06	\$200	\$2,812
Right of way for freight track.....	613,000				
Right of way Iloilo to Passi.....	18,110,000	19,310,000	174.40	75	13,080
Area of station grounds.....	1,200,000				
Section Batan-Passi:					
Right of way Batan to Passi.....	23,200,000	24,550,000	228.08	75	17,466
Area of station grounds.....	1,350,000				
Section Cápiz-Bilao (shore line):					
Right of way Cápiz to Bilao.....	9,387,600	9,987,600	92.79	75	6,960
Area of station grounds.....	600,000				
Section Cápiz-Dao (branch line):					
Right of way from station 209+00 of shore line to Dao.....	6,981,400	7,131,400	66.25	75	4,969
Area of station grounds.....	150,000				
Total for right of way.....					45,287

APPENDIX 19.—*Signal and telegraph system, Iloilo-Cápiz-Batan Railway.*

Cost of 1 mile of telegraph:		
30 poles 30 feet long, at \$0.22 per foot.....		\$198.00
30 cross arms, 7 feet B. M., at \$75 M.....		15.75
30 braces steel, 10 pounds each, at 2 cents.....		6.00
60½ by 10 inch bolts.....		3.50
2 miles galvanized iron wire, No. 10, 472 pounds, at 3 cents.....		14.16
60 insulators, at 7½ cents.....		4.50
2 pole braces 25 feet long, at 20 cents per foot.....		10.00
Switch boards, instruments, cells, lightning arresters, \$50 per station; average per mile		12.50
Labor and transportation.....		100.00
Total.....		364.41
Cost of one signal semaphore:		
Semaphore complete in place.....		50.00
Switch mechanism for signal (not automatic).....		10.00
Total.....		60.00
Cost of signals and telegraph:		
Section Iloilo-Passi, 35.90 miles, at \$365.....	\$13,136.00	
26 signals, at \$60.....	1,560.00	14,696.00
Section Batan-Passi, 43.76 miles, at \$365.....	15,972.00	
20 signals, at \$60.....	1,200.00	17,172.00
Section Cápiz-Bilao, 17.84 miles, at \$365.....	6,512.00	
8 signals, at \$60.....	480.00	6,992.00
Section Cápiz-Dao, 13.34 miles, at \$365.....	4,869.00	
6 signals, at \$60.....	360.00	5,229.00
Total.....		44,089.00

APPENDIX 20.—*Table of estimated costs Iloilo-Cápiz-Batan Railway.*

SECTION ILOÍLO-PASSI.

	Total cost.	Remarks.		Total cost.	Remarks.
Right of way.....	\$15,892	Per Table 18.	Engine houses and shops.....	\$56,000	Per Table 16.
Grading.....	193,880	Per Table 10.	Equipment.....	200,082	Per Table 17.
Bridges and culverts.....	521,395	Per Table 11.	Signal and telegraph systems.....	14,696	Per Table 19.
Track and ballast.....	334,537	Per Table 12.			
Station buildings.....	86,600	Per Table 13.			
Water tanks.....	5,750	Per Table 14.			
Coaling stations.....	5,000	Per Table 15.	Total.....	1,433,832	

APPENDIX 20.—*Table of estimated costs Iloilo-Cápiz-Batan Railway—Continued.*

SECTION BATAN-PASSI.

	Total cost.	Remarks.		Total cost.	Remarks.
Right of way.....	\$17,466	Per Table 18.	Engine houses and shops.	\$16,000	Per Table 16.
Grading.....	372,602	Per Table 10.	Equipment.....	243,277	Per Table 17.
Bridges and culverts..	508,849	Per Table 11.	Signal and telegraph systems.	17,172	Per Table 19.
Track and ballast.....	386,591	Per Table 12.			
Station buildings.....	34,000	Per Table 13.	Total.....	1,609,307	
Water tanks.....	6,250	Per Table 14.			
Coaling stations.....	7,100	Per Table 15.			

SECTION CÁPIZ-BILAO.

Right of way.....	\$6,960	Per Table 18.	Engine houses and shops.	\$8,000	Per Table 16.
Grading.....	126,095	Per Table 10.	Equipment.....	99,179	Per Table 17.
Bridges and culverts..	149,544	Per Table 11.	Signal and telegraph systems.	6,992	Per Table 19.
Track and ballast.....	156,380	Per Table 12.			
Station buildings.....	16,500	Per Table 13.	Total.....	578,450	
Water tanks.....	2,500	Per Table 14.			
Coaling stations.....	6,300	Per Table 15.			

SECTION CÁPIZ-DAO.

Right of way.....	\$4,969	Per Table 18.	Engine houses and shops.	.....	Per Table 16.
Grading.....	89,830	Per Table 10.	Equipment.....	\$74,162	Per Table 17.
Bridges and culverts..	127,487	Per Table 11.	Signal and telegraph systems.	5,229	Per Table 19.
Track and ballast.....	114,328	Per Table 12.			
Station buildings.....	7,000	Per Table 13.	Total.....	424,005	
Water tanks.....	1,000	Per Table 14.			
Coaling stations.....	.....	Per Table 15.			

RECAPITULATION.

Right of way.....	\$45,287	Per Table 18.	Engine houses and shops.	\$80,000	Per Table 16.
Grading.....	782,407	Per Table 10.	Equipment.....	616,700	Per Table 17.
Bridges and culverts..	1,307,275	Per Table 11.	Signal and telegraph systems.	44,089	Per Table 19.
Track and ballast.....	991,836	Per Table 12.			
Station buildings.....	144,100	Per Table 13.	Total.....	4,045,594	
Water tanks.....	15,500	Per Table 14.			
Coaling stations.....	18,400	Per Table 15.			

APPENDIX 29.—*Personnel.*

ORIGINAL ORGANIZATION.

F. D. Hayden, assistant engineer, chief of party; G. H. Guerdrum, assistant engineer, assistant chief and topographer; L. H. Morris, transitman; Edward Thompson, levelman; L. W. Patteson, in charge of camp; C. del Rosario and Emilio Afable, rodmen; Chinese cook.

CHANGES IN PERSONNEL AND ORGANIZATION.

July 11.—Party left Manila.
 August 1.—Organization at this date same as when leaving Manila.
 August 3.—Chinese cook quit work and Filipino cook engaged.
 August 6.—Mr. C. H. Kendall and H. C. Helmuth arrived at noon; in afternoon Mr. Kendall left for Manila.
 August 20.—Mr. L. W. Patteson left for Cápiz on account of broken wrist.
 September 2.—Mr. G. H. Guerdrum left for Manila.
 Organization at this date: F. D. Hayden, chief of party; L. H. Morris, transitman; Edward Thompson, levelman; H. C. Helmuth, C. del Rosario, and Emilio Afable, rodmen; native cook.
 September 14.—Mr. C. H. Kendall arrived at noon.
 September 15.—Mr. C. H. Kendall left for Cápiz, and Mr. William Hasketh, with Vicente Tianco, rodman, and Chinese cook, arrived.

* Appendixes 21 to 28, inclusive, are on file in the office of the Bureau of Insular Affairs, War Department.

September 17.—Mr. Edward Thompson left for Cápiz on sick leave.
 September 24.—Mr. J. C. Koch arrived from Manila.
 September 25.—Vicente Tiano, rodman, left for Manila.
 September 28.—Mr. L. W. Patteson reported for duty.
 October 4.—Mr. L. H. Morris and C. del Rosario left for Manila; Mr. Morris on sick leave.
 Organization of party at this date: F. D. Hayden, chief of party and transitman; J. C. Koch, levelman; L. W. Patteson, in charge of camp; H. C. Helmuth, William Haskett, and Emilio Afafe, rodmen; Chinese cook.
 October 10.—Mr. D. J. Richards, transitman, arrived from Manila.
 October 12.—Chinese cook quit work.
 October 14.—Mr. Edward Thompson reported for duty; Mr. William Haskett and Chinese cook left for Manila.
 November 1.—Organization of party at this date: F. D. Hayden, chief of party; D. J. Richards, transitman; Edward Thompson, levelman; J. C. Koch, topographer; L. W. Patteson, in charge of camp; H. C. Helmuth, and Emilio Afafe, rodmen; native cook.
 November 20.—Mr. A. D. Richey and Mr. A. E. Harris reported for duty in Iloilo.
 November 24.—Mr. F. D. Hayden left for Iloilo.
 November 26.—Tomás Jarobilla employed as rodman.
 At this date the party was divided into two parts, one part working northward from Iloilo toward Passi, the other part working southward from Passi toward Iloilo. The organization was as follows:
 Party working northward: F. D. Hayden, chief of party and transitman; A. D. Richey, levelman; A. E. Harris and Tomás Jarobilla, rodmen; native cook.
 Party working southward: D. J. Richards, in charge of party and transitman; Edward Thompson, levelman; J. C. Koch, topographer; L. W. Patteson, in charge of camp; H. C. Helmuth and Emilio Afafe, rodmen; native cook.
 December 7.—Both parties met at Pototan.
 December 13.—Reported in Manila.

APPENDIX 30.—Cost of field work, Iloilo-Cápiz-Batán Railway survey, July 11 to December 13, 1905 (155 days).

Name.	Days.	Rate per month.	Total.
F. D. Hayden.....	155	\$133.33	\$675.53
J. C. Koch.....	83	100.00	276.66
E. Thompson.....	127	100.00	413.32
G. H. Guerdum.....	63	150.00	305.00
L. H. Morris.....	85	100.00	276.66
L. W. Patteson.....	125	\$75.00-80.00	291.00
D. J. Richards.....	67	100.00	223.33
H. C. Helmuth.....	138	60.00	276.00
D. J. Richey.....	28	116.66	108.90
A. E. Harris.....	28	60.00	56.00
C. del Rosario.....	85	15.00	41.50
E. Afafe.....	155	17.50	88.71
Lee Chan.....	34	20.00	23.33
W. Haskett.....	33	60.00	68.00
Total.....			3,123.94

TOTALS FOR FIELD WORK.

Salaries.....	\$3,123.94
Labor.....	902.12
Subsistence.....	904.92
General expenses.....	332.97
Total.....	5,263.95

APPENDIX C.

ANNUAL REPORT OF THE DIRECTOR OF POSTS.

BUREAU OF POSTS OF THE PHILIPPINE ISLANDS,
OFFICE OF THE DIRECTOR OF POSTS,
Manila, P. I., October 1, 1905.

SIR: I have the honor to submit the following as my fifth annual report of the bureau of posts, the same being for the fiscal year ending June 30, 1905. The information relative to revenues and expenditures is given as obtained from the auditor:

PERSONNEL OF THE SERVICE.

The employees of the bureau of posts at the commencement of the fiscal year were as follows:

Postmasters, 102 Americans and 289 Filipinos; clerks in post-offices, 72 Americans, 84 Filipinos, and 1 Chinese; officers and clerks in the bureau of posts, 23 Americans and 8 Filipinos, making a total of 579.

During the year appointments were made as follows:

Postmasters reinstated, 1 Filipino; transferred from other branches of the bureau of posts, 11 Americans and 2 Filipinos; transferred from other bureaus, 1 American and 2 Filipinos; appointed from civil-service certifications, 5 Americans and 2 Filipinos; unclassified appointments, 38 Americans and 195 Filipinos.

Clerks in post-offices reinstated, 2 Americans; transferred from other branches of bureau of posts, 12 Americans; transferred from other bureaus, 2 Americans and 4 Filipinos; appointed from civil-service certifications, 12 Americans and 15 Filipinos; unclassified appointments, 1 American, 26 Filipinos, and 1 Japanese; appointed from the United States postal service, 10 Americans.

Bureau of posts transferred from other branches of the bureau of posts, 6 Americans; appointed from civil-service certifications, 1 Filipino; unclassified appointment, 1 Filipino.

During the year separations from the service were as follows:

Postmasters transferred to other branches of the bureau of posts, 14 Americans; classified postmaster resigned, 1 American; unclassified postmasters resigned, 74 Americans and 139 Filipinos; classified postmaster removed, 1 American; unclassified postmasters removed, 2 Filipinos; by death, 1 American and 2 Filipinos.

Clerks in post-offices transferred to other branches of bureau of posts, 15 Americans and 3 Filipinos; transferred to other bureaus, 5 Americans and 1 Filipino; classified clerks resigned, 17 Americans and 6 Filipinos; unclassified clerks resigned, 2 Americans and 19 Filipinos; clerks from United States postal service resigned, 2 Americans; classified clerks removed, 1 American and 5 Filipinos; unclassified clerks removed, 10 Filipinos.

Bureau of posts, 1 Filipino transferred to another bureau, 2 Americans resigned, and 1 unclassified Filipino clerk resigned.

Officers, clerks, and employees of this bureau at the close of the fiscal year were as follows:

Postmasters, 64 Americans and 350 Filipinos; clerks in post-offices, 66 Americans, 96 Filipinos, 1 Chinese, and 1 Japanese; office director of posts, 26 Americans and 8 Filipinos, making a total of 612, an increase of 33 during the year.

REVENUES AND EXPENDITURES.

In Tables A and B will be found comparative statements of revenues and expenses of each fiscal year since 1899.

The total stamp sales for the year are ₱1,653.25 less than for the preceding year. I believe that this bureau suffered a loss of at least ₱25,000 in stamp sales by the change in the customs regulations of the United States, which went into effect April 1, 1904, making all merchandise from the Philippine Islands subject to customs duty.

Taking this fact into consideration, it will be seen that this loss was almost overcome by other increases in postal business, most of which, if not all, comes from the natives of the islands, who are rapidly coming to use the mails.

There was a loss of ₱815.62 in the amount of postage collected at the second-class rates of postage from newspapers and news agents, but a material gain in the amount of box rents collected and fees on money orders transferred to postal funds, so that the total revenues for the year exceed those of the previous year by ₱5,772.16, or more than 2 per cent.

The large increase in the number of post-offices and mail transportation routes during the latter part of the fiscal year 1904, and in the first quarter of this year, is the cause of the increase of ₱100,135.02 in the expenses for the year. To operate this additional service it was necessary to increase the clerical force in the office of the director of posts, and also the force of post-office inspectors, as well as to purchase a large amount of office supplies and mail bags.

To the expenses shown in these tables must be added ₱19,466.40, being the amount of printing and binding received from the public printer, and also ₱5,360.64 salaries and wages covering accrued leave of persons resigning during the year, paid from the insular salary and expense fund.

DEAD-LETTER OFFICE.

Complete statistics covering the work of the dead-letter office are shown in Tables H, I, and J, from which it will be seen that during the year a total of 48,102 pieces of mail were received, which for any cause could not be delivered to addressees. This is an increase of 8,959 over the preceding year.

There was a slight decrease in the number of pieces of undelivered mail returned from the United States to senders in the Philippines and a slight increase in the number of pieces of such matter returned from foreign countries. There was also a small decrease in the number of pieces of undelivered mail returned to senders in the United States and a small increase in the number of pieces of such matter returned to senders in foreign countries.

There was a reduction of 1,000 in the number of pieces of request matter returned without opening to senders in the Philippines and an increase of nearly 9,000 in the number of pieces of matter opened and returned to senders; also an increase of 1,294 in the number of pieces of no value destroyed in the dead-letter office. During the year money amounting to ₱160.73 Philippine currency, taken from letters the senders of which could not be found, was turned in to postal revenues.

The amount of mail handled in the dead-letter office is much more than it should be, in spite of the fact that extraordinary efforts are made to secure delivery. The abnormal amount of undelivered mail for Americans and foreigners is caused by the floating character of a large portion of such population and on account of indefinite and insufficient address. Failure in delivery of such mail to natives of the islands will doubtless continue until the adoption of a free-delivery service from all post-offices, as but very few of the natives of the islands will call at post-offices for their mail.

MONEY-ORDER BUSINESS.

At the commencement of the fiscal year the money-order business was in operation at 63 post-offices. It was discontinued at Bacolor, Pampanga Province, when the capital of that province was moved to San Fernando. No extensions of the money-order business to other offices were made during the year on account of lack of funds appropriated for the purchase of safes. Detailed information showing the amount of money-order business transacted at each office will be found in Table D.

The money-order system continues to be used largely for remittances to the United States. During the year orders issued in the Philippines were paid in the United States to the amount of \$1,794,888.53 United States currency, and orders to the amount of \$136,925.14 United States currency issued in the United States were paid at Philippine money-order offices. This is an increase of \$347,810.74 over the preceding year in the amount of orders paid in the United States and \$3,241.82 United States orders paid in the Philippines.

There was an increase of 24 per cent in the total number of orders issued during the year, but the increase in the provincial offices was 31 per cent, while at the Manila office it was only 14 per cent.

The increase in the total number paid was 30 per cent, but the increase in Manila was only 22 per cent, while at provincial offices it was 55 per cent, all of which shows that there has been a greater growth of the money-order business at provincial offices during the last year than at the Manila office.

The average amount of each order issued was \$45.80 United States currency and the average fee collected 17½ cents United States currency. The average amount of each order paid was \$40 United States currency. In the United States the average amount of each order is only about \$7.70.

About two years since steps were taken looking to the making of money-order conventions with Japan, Hongkong, and Singapore, but as yet no definite agreements have been

reached, the difficulties being that these countries have a somewhat different system for the exchange of money-order business with other countries than the one now in use between the United States and the Philippines. It has not been deemed advisable to depart from our present system in order to secure money-order exchanges with these countries when the benefits to be derived are almost entirely for the people of those countries residing in the Philippines.

REGISTRY BUSINESS.

Complete statistics of the registry business of each post-office are shown in Tables K and L. The official registered mail for the year amounted to 80,335 pieces, which is an increase of 82 per cent over the number of pieces of such mail registered free during the preceding year.

There was an increase of over 19,700 in the number of fee-paid letters registered during the year and a decrease of over 23,800 in the number of parcels fee-paid during the year. During the fiscal year 1904, 40,746 registered parcels were sent to the United States; the number of such parcels for this year is but 14,353, or a decrease of 65 per cent. This large decrease was caused by the change in the customs regulations of the United States, making all merchandise from the Philippines subject to customs duties, even though sent as gifts or souvenirs.

There was also a falling off of over 3,700 registered letters and over 6,900 registered parcels received from the United States. On the other hand, there was a good increase in the amount of registered mail received from and sent to foreign countries.

INTERISLAND MAIL TRANSPORTATION.

Interisland mail communication by water was not as good during this year as in the preceding year. Mails are carried on all commercial steamers authorized to engage in the coastwise trade, but the frequency and regularity of these steamers has been somewhat reduced, probably caused by business depression. There has been no regularity in commercial steamer transportation except a weekly line between Manila and Iloilo and between Manila and Cebu. Sailings to and from other ports have been irregular, and the length of stops in ports of call very uncertain, as the entire service depends upon commercial business. It is this uncertainty of the service that gives cause for occasional complaint of mails of a certain date reaching destination ahead of mails dispatched at an earlier date by another steamer.

Every effort is made, particularly at Manila, to dispatch mails by the steamer that will reach destination the quickest, but in spite of our efforts in this direction it occasionally happens that the first steamer out will stop unusually long at way ports or go to other ports not on the schedule furnished us by the agents before departure of the steamer from Manila. Thus a steamer leaving Manila at a later date will reach certain ports ahead of the other one.

The service secured from interisland army transports has been very good, as most of these vessels are operated on quite regular schedules, but the service of the steamers of the bureau of coast guard and transportation has not been as good as in the preceding year.

Regular service was discontinued on route 6, around the island of Cebu, touching at several ports on the island of Negros, September 1, 1904. On January 1, 1905, regular service on route 1, Manila to Aparri, and on route 7, around the islands of Leyte and Samar, was discontinued. On January 1, 1905, route 5, Manila to Iloilo, touching at ports around the island of Panay and at Romblon and several ports on the island of Negros, was consolidated with route 3, but omitting much of the service performed by old route 5.

Since the discontinuance and consolidation of these regular routes we have had to depend upon commercial vessels and upon irregular sailings of steamers of the coast-guard service to serve the places not covered by the consolidation mentioned.

At the close of the year regular service was still maintained on route No. 2 twice monthly from Manila to Surigao; No. 3, twice monthly, Manila to Puerto Princessa; route No. 4, monthly from Manila to Baler; route No. 8, twice monthly from Zamboanga to Mati and Zamboanga to Joló; route No. 9, twice monthly, Cebu to Surigao, and route No. 10, twice monthly, Manila to Zamboanga.

Postal clerks were maintained on steamers running on regular schedules. These clerks distributed during the year 591,650 letters and 181,500 pieces of other mail and handled 8,732 registered articles. The total distance traveled by these clerks was 214,408 miles.

Postal clerks on the main line of the Manila and Dagupan Railroad distributed during the year 1,923,950 letters and 519,750 pieces of other mail and handled 20,821 registered articles and traveled 88,162 miles.

The transportation of mails on the Cabanatuan branch of the Manila Railway Company, Limited, was commenced July 1, 1904, between Bigaa and Baliuag, the latter point being as far as regular train service was then operated. Subsequently train service and the

transportation of mails were extended to San Isidro, and since the close of the year to Peñaranda. The company expects to have regular train service in operation to Cabanatuan about December 15 next.

Table E, accompanying this report, gives complete detailed information covering all inland mail transportation. The total cost of inland transportation for the fiscal year 1904 was ₱36,663.41, but much of this service was started during the latter half of that year. The total cost of this class of service for the present year is ₱68,290.50.

During the fiscal year 1904 we had 52 routes for transportation of mails between post-offices and mail trains or mail boats, which cost ₱10,218.08. For the fiscal year 1905 we had 60 of such routes, the cost of which was reduced to ₱8,814.46.

The cost of transportation between post-offices on 121 routes for the fiscal year 1904 was ₱26,262.83 for a total of 148,492 miles.

The same class of transportation for the fiscal year 1905 on 198 routes cost ₱57,276.59 for a total mileage of 462,782. The average cost per mile for the fiscal year 1904 was 17.6 centavos, while for 1905 it was but 12.3 centavos. There was an increase of over 96 per cent in the total length of all routes and an increase of 212 per cent in the total number of miles mails were carried, while the cost for the service was increased but 118 per cent and the average cost per mile was reduced by over 30 per cent.

When first establishing land transportation of mails between post-offices we were obliged in many cases to pay rather exorbitant rates to get the service started for the reason that the Filipinos did not understand the requirements. Within the last year numerous material reductions have been made, and in many places there has been keen competition to secure contracts. From further reductions made since the close of the fiscal year, and others that will hereafter be made, we hope to reduce the rate of cost for the year 1906 to 9 centavos per mile. The average cost of the same class of service in the United States, commonly called "star service," for the fiscal year 1903 was 10.4 centavos per mile.

MAIL COMMUNICATION WITH THE UNITED STATES AND FOREIGN COUNTRIES.

Tables N and O show the number and amount of mails dispatched to and received from the United States (including Honolulu, Guam and United States ships and troops in foreign ports). From these tables it will be seen that during the year 85 mails were received from the United States, 16 by army and navy transports and 69 by commercial liners via Hongkong or Nagasaki; also that 84 mails were dispatched to the United States, 16 of which were by army and navy transports and 68 by commercial liners via Hongkong or Nagasaki.

There has been some criticism because the United States Post-Office Department has not made use of commercial steamers to the fullest possible extent in the dispatch of mails to the Philippines. It is believed that all such causes for complaint has been cured and that hereafter full use will be made of all commercial vessels.

Comparing the amount of mail received from and dispatched to the United States with the figures of the preceding year we find a decrease of 245 pouches of letters, 29 pouches of registered matter, and 387 bags of papers received; and a loss of 87 pouches of letters, 1,240 pouches of registered matter, and 1,961 bags of papers dispatched. Without doubt the falling off in the amount of mail dispatched to the United States was caused almost entirely by the change in customs regulations mentioned under the head of registry business.

In Table F will be found detailed information showing the names of commercial vessels carrying mails for the United States and foreign countries to foreign ports and the amount paid to each. The expense for this purpose was ₱520.31 less than for the preceding year, caused by a falling off of 784 in the number of bags of United States mail dispatched from Manila on commercial steamers.

Table P shows the total amount of mail received from and dispatched to foreign countries during the year. Comparing these figures with those of the previous year we find an increase of 54 in the number of mails and 775 in the number of bags received from foreign countries; also a decrease of 6 in the number of mails dispatched to foreign countries, but an increase of 568 in the number of bags dispatched, and a material increase in the net weight of letters and other mail matter sent to foreign countries.

Table G is a comparative statement of the amounts paid to the several foreign countries for transportation of Philippine mails yearly since American occupation of the Philippines. The slight reduction in cost for the last year is caused by our having obtained a better rate of exchange for the purchase of drafts to pay the accounts of these countries.

DEPREDACTIONS AND DEFALCATIONS.

On January 28, 1905, an inspector of this bureau found J. H. Ray, postmaster at Batangas, \$1,242.49 United States currency short in his money-order funds. Ray subsequently confessed to the misappropriation of public funds, was tried, convicted, and sentenced to six years and one day imprisonment and a fine equal to the amount embezzled.

On March 6, 1905, B. French, postmaster at Joló, Moro Province, committed suicide. An inspector of this bureau on taking charge of the post-office found a shortage in money-order funds which, as subsequently audited by the auditor, amounted to \$658.68 United States currency. Both of these shortages were made good by the surety company in which these postmasters were bonded.

July 10, 1904, Francisco Gatsalian, a clerk in the post-office at Malolos, Bulacán Province, was arrested, charged with stealing registered matter from the mails. This case is still pending in the courts.

In July, 1904, Demetrio Valera, temporarily employed in the post-office at Tabaco, Albay Province, during the absence of the postmaster, was arrested charged with stealing from the mails two letters, each containing a check for ₱40. This case was subsequently brought to trial, but this office has not been advised of the result.

On July 8, 1904, an inspector of this bureau caused the arrest of Luciano Sugay, clerk employed in the post-office at Angeles, Pampanga Province, on the charge of abtraction of mail matter passing through that office. He was convicted of infidelity in the custody of public documents, and sentenced to four months imprisonment and a fine of 400 pesetas.

On November 12, 1904, two registered letters containing a total of ₱15, dispatched by the postmaster at Atimonan, Tayabas Province, disappeared from the post-office at Pagbilao while in transit through that office. After a thorough investigation, responsibility for the loss was fixed on the postmaster at Pagbilao, José Abastillas, who was dismissed from the service, after being required to make reimbursement to the senders for the amount involved.

On April 26, 1905, Agapito Gacad, postmaster at Naguilian, La Unión Province, was removed from office and arrested for pilfering the mails. Subsequent investigation showed that he had stolen a number of letters from the mails, the alleged contents of which amounted to ₱250. He was also found short in his accounts with the government to the amount of ₱18.76. This case is still pending in court.

During June and July, 1904, numerous complaints were made by the publishers of the Manila Times that small amounts of money sent in the mails to this publication failed to reach them. An inspector of this bureau was put on the case and he soon secured sufficient evidence to cause the arrest, on July 18, 1904, of Basilio de la Rosa, messenger in the Times office, who subsequently confessed. It was found that he was in possession of an extra key to the post-office box which the publishers believed to have been lost. It was his practice to go to the post-office during the night and by means of this key open the box and take out such letters as he believed contained money. He was convicted and sentenced to seven months imprisonment.

On July 18, 1904, the towns of Pinamungajan and Minglanilla, in Cebú Province, were looted and burned by Pulajanés. All mail and post-office supplies, including mail key and stamped stock to the value of ₱20 at Pinamungajan and ₱10 at Minglanilla, were either burned or carried away.

On November 16, 1904, the town of Orás, Samar Province, was looted and burned by Pulajanés, with the loss of all mail and post-office supplies, including the mail key and stamped stock to the value of ₱31.62.

On August 3, 1904, the south-bound mail car on the Manila and Dagupan Railway was entered just after leaving Caloccan by a masked man who attacked the postal clerk, George Shanahan, beating him over the head and shoulders with a heavy glass bottle. After knocking the clerk into insensibility this man tore open a considerable quantity of registered mail and then left the mail car as the train was entering the Manila station. During the scuffle Mr. Shanahan succeeded in tearing off the mask, and thus recognized his assailant as Joseph J. Capurro, an ex-railway postal clerk who had been dismissed from the service June 14, 1904. Capurro was subsequently apprehended in Manila by the secret-service bureau, tried and convicted of attacking a public official, and sentenced to five years and one month imprisonment.

On February 3, 1905, the mail carrier between Batangas and Cuenca was held up at the barrio of Matunon by 5 mounted men and robbed of ₱14, personal money. The mail pouch was cut open, but so far as known no mail was taken or destroyed.

On June 30, 1904, the Manila post-office made a dispatch of mails to Kobe and Yokohama, Japan, by the British steamship *Knight Commander*, consisting of 2 bags, containing 39 registered articles. This steamer was sunk by the Russian fleet between Shanghai and Kobe, and the mail taken or destroyed. Report was made to the Post-Office Department of the United States, and the matter has been taken up with the British postal authorities.

The interisland steamship *Adelante*, sunk in collision off the coast of Batangas May 6, 1905, carried 2 pouches and 3 bags of mail for Bulán and Sorsogón, none of which was recovered.

Altogether the service has been surprisingly free from losses that could be traced directly to employees of the bureau. All complaints of alleged losses are investigated to the fullest possible extent. In the great majority of such complaints we find either that there was no

ground for complaint, as the mail reached destination safely, or that matter alleged to have been sent in the mails was never sent at all. In many other cases we find that articles alleged to have been sent by mail were actually intrusted for mailing to irresponsible messengers, who, in many cases, doubtlessly failed to mail them.

With but few exceptions all losses of registered mail, responsibility for which could be located on employees of this bureau, have been made good by the employee responsible for the loss. The only failures to make good such losses have been in cases of employees responsible who left the service before the losses were discovered.

The question of indemnifying senders of first-class registered matter to the value of not exceeding \$25 United States currency, in each case, the same as is done in the United States, has several times been under consideration and discussion. The undersigned has not recommended legislation to do this on account of the peculiar conditions existing, and I believe this liability should not be assumed except on the condition that the contents of each first-class article of registered matter be made known and declared to the postmaster at the time of mailing.

EXTENSIONS AND IMPROVEMENTS.

Since my last report the United States Post-Office Department concluded parcels-post conventions as follows:

With Norway, effective October 1, 1904; Belgium, effective February 1, 1905; Great Britain and Ireland, effective April 1, 1905; and the Commonwealth of Australia, including New Zealand, effective August 1, 1905. In each case the parcels exchanged are limited to a weight of 4 pounds 6 ounces, and a valuation of \$50 United States currency.

Under the order of the Postmaster-General of February 21, 1903, the Philippine postal service is included in the postal conventions of the United States, so that we are now able to exchange parcels-post packages not only with the countries above mentioned, but with Germany, Japan, and offices served therefrom; Hongkong, and offices served therefrom; Mexico, and many South and Central American countries.

On July 1, 1904, we had 391 post-offices. During the year 62 new ones were established, 42 discontinued, and 3 reestablished, bringing the total in operation at the close of the fiscal year to 414.

The intention expressed in my last report of establishing a post-office at the seat of government in each organized municipality, and at other places in the islands necessary for the proper handling of the mails, was not carried to completion during the year, on account of lack of appropriation and the expression of the Commission against any material increase. It was necessary to discontinue a number of small, unimportant post-offices in order to provide means to establish offices at other places more deserving of them.

The inland transportation of mails was materially improved during the year. This class of service is now operated with very good regularity, and mails are reasonably well cared for while in the custody of mail carriers. While this has been accomplished we have at the same time, as heretofore stated, made a very material reduction in the rate of cost of such transportation.

The letter-carrier service, by which a free delivery of mails in the city of Manila is furnished, has been materially improved, and altogether the service rendered by these carriers is highly satisfactory. These carriers delivered a total of 820,468 pieces of mail during the year, 85 per cent of which were letters, and collected from street letter boxes and otherwise a total of 896,248 pieces of mail, 90 per cent of which were letters.

On June 30, 1904, we had 35 publications admitted to the mails as second-class matter, and 4 news agents authorized to send second-class matter at publishers' rates. During the year 14 additional publications and 2 news agents were granted the same privileges, and 11 publications and 1 news agent's permit were discontinued, so that at the close of the fiscal year we had 38 publications admitted to the mails as second-class matter and 5 authorized news agents.

During the year there was a decrease of 41 in the number of American officers and employees, and an increase of 73 in the number of Filipinos. The Filipino postmasters are, on the whole, rendering very good service. Those who have been in office a year or more have learned their duties sufficiently well to give excellent satisfaction. When a Filipino first takes charge of a post-office he finds himself swamped with a multitude of details of the postal service which he knows nothing about, but with proper personal instruction by post-office inspectors he readily becomes reasonably familiar with the ordinary routine work and in time makes a very satisfactory postmaster. Without this personal instruction a vast amount of correspondence is necessary, and even then the same results are not secured.

CONCLUSION.

In conclusion I wish to submit the following recommendations:

First. That authority be granted, and sufficient money appropriated, for extending the service to every municipality in the islands, and for the establishment of regular transportation between all post-offices. Until this is accomplished the postal service will not be satisfactory.

While it is true that the postal revenues are extremely small, we can not hope for much of an increase until a better service, and in many places more frequent communication, is provided. The better the service is the more it will be used.

The following list of provinces shows the number of municipalities and post-offices in each at the close of the fiscal year:

Province.	Municipalities.	Post-offices.	Province.	Municipalities.	Post-offices.
Albay.....	27	14	Masbate.....	13	9
Ambos Camarines.....	35	18	Mindoro.....	8	1
Antique.....	11	1	Misamis.....	10	4
Bataan.....	8	6	Moro.....	14	14
Batangas.....	15	15	Negros Occidental.....	21	21
Benguet.....	16	2	Negros Oriental.....	14	10
Bohol.....	33	9	Nueva Ecija.....	14	12
Bulacán.....	13	13	Nueva Vizcaya.....	6	5
Cagayan.....	22	14	Pampanga.....	16	17
Cápiiz.....	22	3	Pangasinán.....	32	32
Cavite.....	11	12	Palawan.....	6	4
Cebu.....	41	29	Rizal.....	16	13
Ilocos Norte.....	10	10	Romblón.....	6	1
Ilocos Sur.....	19	14	Samar.....	25	11
Iloilo.....	17	2	Sorsogón.....	16	12
Isabela.....	9	7	Surigao.....	12	2
La Laguna.....	20	18	Tarlac.....	9	9
La Unión.....	12	12	Tayabas.....	25	18
Lepanto-Bontoc.....	21	4	Zambales.....	8	8
Leyte.....	34	7			
Manila.....	1	1	Total.....	668	414

Second. Necessary authority for the establishment of a free-delivery service from the post-office at the seat of government in each municipality. A sort of free-delivery service is now maintained in many municipalities under paragraph gg, section 39, of the Municipal Code. This service is far from satisfactory. It is the cause of practically all of the complaints against the postal service that appear from time to time in Spanish and Filipino newspapers. The management of this service by municipal officials gives them great opportunity for prying into, and becoming acquainted with, the correspondence of the people. Many complaints are made regarding the losses of letters and newspapers which, without doubt, occur after the mail passes from the hands of our postmaster into the hands of the municipal officials or municipal carriers. Some kind of a free-delivery service seems absolutely necessary, as the common people, who receive very little mail, will not go to the post-office for it, but depend upon delivery by municipal carriers or otherwise.

During the last fiscal year 37,044 pieces of mail were advertised, of which only 7,110 were subsequently delivered before being turned in to the dead-letter office. Seven hundred copies of weekly advertised lists of undelivered mail are published and sent to all post-offices and military posts in the islands. In addition to this these advertised lists are printed in at least 2 of the English and 4 of the Spanish and Filipino papers in Manila. In the dead-letter office a total of 48,102 pieces of undelivered mail were handled during the last year. With a good free-delivery service throughout the islands there is no reason why the amount of mail advertised and handled in the dead-letter office should not be reduced to a minimum.

The cost of such a service could be partially overcome by requiring each municipality to provide a suitable room for the post-office and supply it with the necessary furniture, or by increasing the letter rate of postage on letters for delivery in the islands from 2 centavos per half ounce to 4 centavos per ounce, the rate now charged on letters going to the United States, which is also the rate charged in the United States at free-delivery and rural free-delivery offices. In the end this increase in the rate of postage would be less of a burden on the common people than the present system, under which it is understood that the municipal carriers, as a general rule, collect a fee from the addressees for every piece of mail delivered. But if desired, this expense could be entirely overcome by requiring each province or municipality to reimburse the general government for the cost of the service, which in the end would be less expensive to the municipality than the present system, as no doubt many unnecessary carriers are now employed.

This service is also recommended for the reason that the entire postal service should be under the management and control of the general government.

Third. That provision be made by law requiring all vessels authorized to engage in the coastwise trade to carry the mails, either without compensation or at a fixed rate of pay. Commercial vessels are now carrying, and always have since American occupation carried the mails free of charge, but there is no law requiring this to be done and the service is not as good as it should be.

On July 1 last the customs inspectors at all ports in the islands except entry ports were discontinued. Prior to that time, with the cooperation of the collector of customs and the assistance of these inspectors, we had little or no difficulty in the dispatch of mails by all commercial vessels. But since that date, as commercial vessels are not required to clear from coastwise ports, we have numerous failures to dispatch mail, and there seems no way of avoiding these failures without some legislation making it incumbent upon all vessels to carry the mails.

Another reason for legislation on this subject is on account of the contracts that will probably be made for transportation of mails and government freight and passengers over certain laid-out routes. For if, after these contracts are made, mails are carried only on contract vessels, mail communication between the several islands will be less and more infrequent than at present, the only difference being that regularity will be substituted for frequency.

Fourth. That a special mail launch be provided for use in Manila Bay. With a special launch used for mail only, there will be a material improvement in the mail service at Manila. As it now is, all mails are from a half hour to two or three hours longer than necessary reaching the post-office, and in nearly every case mails must be closed out and dispatched to outgoing steamers much earlier than would be necessary if we had our own launch. Special reports, showing in detail the amount of time consumed under the present arrangement in receiving mail from incoming steamers and dispatching to outgoing steamers, have been made.

Fifth. In the estimate of appropriations for this fiscal year, not yet acted upon by the Commission, provision has been made for slight increases in the salaries of Filipino postmasters at the smaller offices. It is hoped that favorable action will be taken, for until we can pay slightly more than ₱10 or ₱15 per month to a postmaster we will not get him to take much interest in the service, nor will we secure the best possible results. The low salaries heretofore paid have been the cause of many of the resignations of Filipinos after a few months' service, they finding that the duties of postmaster are out of proportion to the compensation.

These increases, if allowed, together with the personal instruction by post-office inspectors or special agents of this bureau, which we hope to continue, should be the cause of material improvement in the service during the next year.

Sixth. That steps be taken to permit the sending of gifts and souvenirs free of duty, both from and to the United States. Without doubt, the revenues of this bureau have suffered to the extent of at least ₱35,000 since the discontinuance of the privilege of sending gifts and souvenirs to the United States free of duty under the order which went into effect April 1, 1904. The privilege of receiving gifts from the folks at home, as well as sending presents and souvenirs to friends and relatives at home, is a boon to the Americans in the islands, whether in or outside of the government service, that needs no discussion. The restoration of this privilege, and making it applicable to all Americans, would be a wise thing to do.

In closing, I wish to again express my appreciation of the hearty cooperation and assistance received from all officers and employees of the bureau of posts. Without such help it would be impossible to have accomplished what has been done. Altogether, the general tone of the postal service has materially improved. The officers and employees are more than ever alive to their duties, and show a greater interest in the service. They have worked unceasingly and without regard to extra duty required. During the fiscal year the overtime in the office of the director of posts amounted to 5,963 hours, and in the post-office service the overtime of classified employees amounted to 67,265 hours.

Very respectfully,

C. M. COTTERMAN, *Director of Posts.*

THE SECRETARY OF COMMERCE AND POLICE.

TABLE A.—Comparative statement of revenues for the fiscal years ending June 30, 1900 to 1905.

Items.	1900.	1901.	1902.	1903.	1904.	1905.
Stamp sales.....	P 228,178.36	P 233,182.96	P 238,418.40	P 248,414.36	P 224,354.61	P 222,701.36
Second-class postage.....	1,753.54	3,542.48	4,249.86	6,034.42	5,839.10	5,023.48
Miscellaneous.....	218.74	1,270.34	528.44	319.60	452.71	417.79
Box rents.....	5,546.12	7,609.48	9,552.40	10,121.50	12,780.68	15,152.51
Transfer from money order.....			22,925.54	26,464.52	24,142.34	30,046.46
Total.....	235,696.76	245,665.26	275,674.64	291,354.40	267,569.44	273,341.60
Total expenditures.....	196,440.10	318,057.02	369,171.64	462,764.82	512,853.09	612,971.43
Total revenues.....	235,696.76	245,665.26	275,674.64	291,354.40	267,569.44	273,341.60
Excess of expenditures over receipts.....		72,391.76	93,497.00	171,410.42	245,283.65	339,629.83
Excess of revenues over expenditures.....	39,256.66					

TABLE B.—Comparative statement of expenditures for the fiscal years ending June 30, 1900 to 1905.

Items.	1900.	1901.	1902.	1903.	1904.	1905.
BUREAU OF POSTS.						
Salaries and wages.....		P 30,766.94	P 52,121.00	P 61,664.22	P 78,708.03	P 96,100.16
Traveling expenses:						
Post-office inspectors.....	P 904.48				7,467.45	
Other employees.....	3,890.48				681.14	
Total.....	4,794.96		1,115.80	2,989.32	8,148.59	
Mail transportation:						
Inland.....	2,262.52	4,155.66		15,453.38	36,663.41	68,290.50
Sea.....		8,150.76		13,820.72	14,221.54	13,701.23
Foreign countries.....	7,941.98	41,900.08		19,486.40	17,129.76	17,104.61
Postal clerks.....				3,216.64	22,273.20	24,516.62
Total.....	10,204.50	54,206.50	30,982.02	51,982.14	90,287.91	123,612.96
Contingent expenses:						
Traveling expenses—						
Post-office inspectors.....						10,656.62
Other employees.....						578.64
Furniture.....				760.96	601.96	397.20
Office supplies.....				2,841.84	8,389.41	4,797.17
Postal scales.....				477.16	2,617.74	
Postmarking and receiving stamps.....				1,175.46	899.15	2,357.44
Mail equipment.....				345.06	1,373.98	19,727.72
Mail locks, etc.....				364.00	1,094.67	
Manufacturing stamped paper.....				1,216.06	1,872.32	3,665.92
Official envelopes.....				6,857.98	92.93	2,190.80
Telegrams.....				488.24	633.00	502.82
Safes.....				1,618.40	5,333.32	
Miscellaneous.....	9,956.56	14,892.34	30,658.02	6,854.66	1,101.62	625.67
Total.....	9,956.56	14,892.34	30,658.02	22,999.84	24,000.00	45,500.00
Total bureau of posts.....	24,946.02	99,925.78	114,876.84	139,635.52	201,144.53	265,213.12
POST-OFFICE SERVICE.						
Salaries and wages:						
Postmasters.....		69,144.66	69,411.52	113,696.54	118,285.86	142,547.06
Clerks.....		127,507.42	157,972.20	177,442.88	165,422.70	195,211.25
Total.....		196,652.08	227,383.72	291,129.42	283,708.56	337,758.31
Contingent expenses:						
Rent.....					17,829.95	3,694.00
Light.....	8,821.34	18,304.68	19,775.52	19,237.88	2,740.87	11.28
Furniture.....					2,300.03	3,980.20
Repairs.....					88.04	1,023.26
Stamp agencies, Manila.....					336.00	420.00
Miscellaneous.....	729.12	3,174.48	7,135.56	12,762.00	4,704.11	871.26
Total.....	9,550.46	21,479.16	26,911.08	31,999.88	28,000.00	10,000.00
Total post-office service.....	171,494.06	218,131.24	254,294.80	323,129.30	311,708.56	347,758.31
Grand total.....	196,440.10	318,057.02	369,171.64	462,764.82	512,853.09	612,971.43

TABLE C.—Statement of revenues and expenses of each post-office as reported by auditor.

Office.	Stamped stock sold.	Postage on second-class matter.	Waste paper sold and miscellaneous receipts.	Box rents.	Compensation of post-masters.	Compensation of clerks.	Rent.	Miscellaneous expenses.
ALBAY PROVINCE.								
Albay.....	P187.82				P228.67			
Bacacay.....	53.62				120.00			
Camalig.....	79.40				140.00			
Daraga.....	129.10				180.00			
Guinobatan.....	285.18				360.00			
Jovellar.....	24.32				120.00			
Legaspi.....	1,870.50			P514.55	1,800.00	P240.00	P290.00	P82.76
Libog.....	162.37				120.00			
Libon.....	2.48				29.33			
Ligao.....	355.76				480.00			
Mallipot.....	1.86				27.33			
Mallinao.....	.03				26.67			
Manito.....	13.20				120.00			
Oas.....	11.32				30.00			
Pandan.....	23.80				120.00			
Polangui.....	68.19				180.00			
Rapu Rapu.....	1.28				22.33			
Tabaco.....	467.97				376.84			
Tivi.....	2.70				26.66			
Virac.....	238.79				240.00			
AMBOS CAMARINES PROVINCE.								
Capalonga.....	26.20				108.00			
Daet.....	361.66				540.00			
Indán.....	32.46				109.00			
Iriga.....	162.30				180.00			
Labo.....	21.94				109.33			
Libmanan.....	44.25				120.00			
Lupi.....	23.16				115.00			
Magarao.....	12.92				120.00			
Mambulao.....	10.30				108.33			
Nabua.....	2.06				17.66			
Calabanga.....	26.98				120.00			
Nueva Cáceres.....	957.94	P19.56			1,200.00	180.00		
Pampuna.....	1.28				15.66			
Paracale.....	24.34				108.66			
Pasacao.....	36.84				180.00			
Ragay.....	59.64				116.66			
San José.....	119.30				180.00			
San Vicente.....	35.00				109.33			
Sipocot.....	37.71				114.66			
Tigaon.....	34.78				100.00			
ANTIQUE PROVINCE.								
San José.....	228.16				600.00			1.00
BATAÁN PROVINCE.								
Abucay.....	58.02				120.00			
Balanga.....	277.43				480.00			
Dinalupijan.....	38.84				120.00			
Mariveles.....	168.32				300.00			
Orani.....	93.14				120.00			
Orión.....	82.65				150.00			
BATANGAS PROVINCE.								
Balayán.....	67.00				180.00			
Batangas.....	1,514.93		P2.30		2,132.21	360.00		57.00
Bauan.....	40.92				120.00			
Calaca.....	21.60				120.00			
Cuenca.....	5.44				120.00			
Ibañ.....	8.90				120.00			
Lipa.....	231.63		.40		360.00			
Lobo.....	6.44				120.00			
Nasugbu.....	105.60				120.00			
Rosario.....	13.34				120.00			
San José.....	6.82				120.00			
San Juan de Booboc.....	24.36				120.00			
Santo Tomás.....	180.52				420.00			
Taal.....	115.54				180.00			
Tanauan.....	112.90				180.00			

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TABLE C.—Statement of revenues and expenses of each post-office as reported by auditor—Continued.

Office.	Stamped stock sold.	Postage on second-class matter.	Waste paper sold and miscellaneous receipts.	Box rents.	Compensation of postmasters.	Compensation of clerks.	Rent.	Miscellaneous expenses.
BENQUET PROVINCE.								
Baguio.....	P 975.79				P 785.00		P 180.00	
Twin Peaks.....	1,683.07				1,200.00			
BOHOL PROVINCE.								
Calape.....	3.52				97.00			
Dauls.....	14.00				130.50			
Jagna.....	3.74				101.66			
Loay.....	18.98				180.00			
Loboc.....	10.00				155.50			
Maribojoc.....	56.62				120.00			
Tagbilaran.....	256.29				817.32			P 7.60
Tubigon.....	19.24				180.00			
Valencia.....	5.50				101.66			
BULACÁN PROVINCE.								
Angat.....	40.60				114.33			
Balluag.....	383.40				450.00			
Bocause.....	107.59				120.00			
Bulacán.....	135.51				240.00			
Calumpit.....	390.72				365.00			
Hagonoy.....	56.98				120.00			
Malolos.....	468.28				600.00	P 80.00		
Meycauayan.....	47.06				116.33			
Paombong.....	22.92				115.00			
Polo.....	68.12				166.33			
Quingua.....	70.40				168.33			
San Miguel.....	116.20				180.00			
Santa Maria.....	57.42				108.33			
CAGAYÁN PROVINCE.								
Abulug.....	111.70				120.00			
Alcalá.....	53.30				300.00			
Amulung.....	89.02				120.00			
Aparri.....	735.45				1,800.00	300.00	517.00	
Baggao.....	5.04				45.00			
Camalaniugan.....	16.80				120.00			
Claveria.....	19.22				72.66			
Gattaran.....	12.50				120.00			
Iguig.....	45.62				120.00			
Lal-lo.....	103.71				120.00			
Mauanan.....	4.22				45.00			
Pamplona.....	20.28				72.66			
Peña Blanca.....	.50				42.33			
Piat.....	14.50				120.00			
Sánchez Mira.....	20.68				116.66			
Santo Niño.....	3.58				50.00			
Solana.....	4.30				120.00			
Tuao.....	5.06				120.00			
Tuguegarao.....	547.35				946.67			5.00
Enrile.....	12.90				120.00			
CÁPIZ PROVINCE.								
Calivo.....	71.52				180.00			
Cápiz.....	557.22				900.00			
New Washington.....	14.00				124.00			
CAVITE PROVINCE.								
Alfonso.....	27.32				119.99			
Bacoor.....	171.77				225.00			
Carmona.....	.86				22.00			
Cavite.....	7,784.08	P 3.30	P 26.10		3,200.00	2,607.78		
Corregidor.....	444.23				480.00			
Imus.....	357.81				265.00			
Indang.....	186.18				240.00			
Maragondon.....	56.96				120.00			
Nalco.....	176.92				230.00			
Noveleta.....	55.32				173.66			
San Francisco.....	202.84				360.00			
Santa Cruz.....	72.49				180.00			
Silang.....	95.01				120.00			

TABLE C.—Statement of revenues and expenses of each post-office as reported by auditor—Continued.

Office.	Stamped stock sold.	Postage on second-class matter.	Waste paper sold and miscellaneous receipts.	Box rents.	Compensation of post-masters.	Compensation of clerks.	Rent.	Miscellaneous expenses.
CEBU PROVINCE.								
Aloguinsan.....	P 7.44				P 118.00			
Argao.....	60.80				120.00			
Balamban.....	35.34				118.34			
Bantayan.....	37.12				120.00			
Barile.....	28.24				236.00			
Bogo.....	48.00				180.00			
Carcar.....	20.00				240.00			
Carmen.....	11.56				111.66			
Catmon.....	12.14				119.33			
Cebd.....	6,623.50	P 223.22		P 1,061.50	3,290.00	P 3,574.45		P 845.76
Dalagueta.....	41.94				120.00			
Danao.....	26.58				120.00			
Dumanjug.....	67.67				120.00			
Ginatilan.....	8.54				117.33			
Liloan.....	31.64				120.00			
Malabuyoc.....	12.92				117.33			
Mandaue.....	12.82				120.00			
Minglanilla.....	8.72				120.00			
Moalbual.....	33.02				117.67			
Naga.....	36.32				120.00			
Opon.....	15.88				180.00			
Oslob.....	19.10				120.00			
Pinamungajan.....	14.46				118.00			
San Fernando.....	23.16				120.00			
San Remigio.....	8.36				119.00			
Sibonga.....	25.37				120.00			
Tabogon.....	11.14				119.33			
Talisay.....	26.60				120.00			
Toledo.....	34.09				118.33			
Tuburan.....	30.64				118.66			
ILOCOS NORTE PROVINCE.								
Bacarra.....	42.57				120.00			
Badoc.....	47.45				120.00			
Bangui.....	3.06				7.00			
Batac.....	79.35				120.00			
D'ngtras.....	33.71				120.00			
Leon.....	691.72			135.10	679.99	203.19		
Paoay.....	70.22				107.66			
Pasquuin.....	52.98				120.00			
San Miguel.....	17.76				109.67			
Piddig.....	18.58				110.00			
ILOCOS SUR PROVINCE.								
Bangued.....	217.77				500.00			
Candon.....	106.26				180.00			
Lapo.....	17.10				120.00			
Magsingal.....	40.12				120.00			
Narvacan.....	30.15				120.00			
Salomague.....	167.94				480.00			
San Esteban.....	13.79				480.00			
Santa.....	9.44				120.00			
Santa Cruz.....	22.88				120.00			
Santa Lucia.....	20.66				120.00			
Santa Maria.....	13.23				120.00			
Sinalit.....	18.72				120.00			
Tagudin.....	23.93				120.00			
Vigan.....	1,048.12				2,000.00	240.00	P 240.00	
ILOILO PROVINCE.								
Camp Jossman.....	1,011.26				1,440.00			
Iloilo.....	8,507.48	222.96		1,902.06	4,000.00	3,374.76	960.00	
ISABELA PROVINCE.								
Angadanan.....	2.26				36.66			
Cabagan Nuevo.....	68.52				180.00			
Cabagan Viejo.....	15.42		P 0.01		40.00			

TABLE C.—Statement of revenues and expenses of each post-office as reported by auditor—
Continued.

Office.	Stamped stock sold.	Postage on second- class matter.	Waste paper sold and miscel- laneous re- ceipts.	Box rents.	Compensation of post- masters.	Compensation of clerks.	Rent.	Miscel- laneous ex- penses.
ISABELA PROVINCE— continued.								
Cauayan.....	P 17.18		P 0.54		P 120.00			
Echagüe.....	72.31				154.66			
Gamu.....	6.00				120.00			
Iligan.....	324.41				599.99			
Naguillan.....	11.30				120.00			
Santa María.....	9.18				40.00			
Santo Tomás.....					40.00			
Tumauini.....	26.53				120.00			
LA LAGUNA PROVINCE.								
Bay.....	162.54				386.66			
Binan.....	161.97				225.00			
Cabuyao.....	29.62				165.00			
Calamba.....	374.12				480.00	P 180.00	P 120.00	
Calauan.....	61.62				120.00			
Lillo.....	4.30				37.00			
Los Baños.....	632.43				1,626.67		136.00	P 25.00
Luisiana.....	2.08				37.66			
Lumban.....	3.00				37.99			
Mabitac.....	2.58				39.00			
Magdalena.....	50.00				180.00			
Malayjay.....	43.71				180.00			
Malahi Island.....	783.72		.02					
Nagcarlan.....	23.30				120.00			
Pacte.....	80.00				240.00			
Pagsanjan.....	227.42				300.00			
Pañgil.....	43.80				120.00			
Pila.....	13.44				80.00			
San Pablo.....	180.11				240.00			
San Pedro Tunasán.....	40.64				180.00			
Santa Cruz.....	366.29				960.00	150.00		
Santa Rosa.....	86.95				120.00			
Siniloan.....	41.96				120.00			
LA UNIÓN PROVINCE.								
Agoo.....	25.32				120.00			
Aringay.....	32.99				120.00			
Bacnotan.....	41.42				165.00			
Balaoan.....	37.42				120.00			
Bangar.....	41.75				120.00			
Bauang.....	35.70				120.00			
Naguillan.....	71.78				119.67			
Namacpacan.....	106.45				120.00			
San Frenando.....	1,274.05			P 236.50	2,366.66	360.00		
San Juan.....	24.63				120.00			
Santo Tomás.....	34.24				120.00			
Tubao.....	21.20				120.00			
LEFANTO-BONTOC PROVINCE.								
Alliem.....	19.13				157.50			
Bontoc.....	103.29				120.00			
Cervantes.....	153.21		.14		600.00	95.00		
Sagada.....	96.86				18.00			
LEYTE PROVINCE.								
Barugo.....	52.58				120.00			
Baybay.....	58.96				180.00			
Carigara.....	156.63				185.67			
Maasin.....	78.22				234.67			
Ormoc.....	698.42				960.00	240.00		
Palo.....	78.20				120.00			
Tacloban.....	1,546.99				2,800.00	240.00	216.00	3.76
MANILA.....	128,157.11	P 4,410.72	390.84	11,054.80	6,803.90	177,488.96		64,993.86

a Includes P 3,797.21 accrued leaves paid by settlement warrant.

b Includes P 3,601.97 for furniture paid insular purchasing agent.

TABLE C.—Statement of revenues and expenses of each post-office as reported by auditor—Continued.

Office.	Stamped stock sold.	Postage on second- class matter.	Waste paper sold and miscel- laneous receipts.	Box rents.	Compensation of post- masters.	Compensation of clerks.	Rent.	Miscel- laneous ex- penses.
MASBATE PROVINCE.								
Aroroy.....	P26.97				P110.00			
Catangan.....	20.24				120.00			
Mandaon.....	8.82				120.00			
Masbate.....	222.95				600.00			
Milagros.....	17.44				120.00			
Pulanduta.....	18.92				120.00			
San Fernando.....	18.10				120.00			
San Jacinto.....	19.16				240.00			
Uson.....	7.60				120.00			
MINDORO PROVINCE.								
Calapán.....	273.20				480.00			
Lubang.....	12.70				80.00			
MISAMIS PROVINCE.								
Mambajao.....	135.43				360.00			
Cagayán.....	380.83	P0.70			804.66	P184.67		
Misamis.....	64.12				240.00			
Oroquieta.....	151.95				300.00			
MORO PROVINCE.								
Bongao.....	26.36				240.00			
Baganga.....	18.34				100.00			
Camp Marahui.....	1,833.60				2,799.97			P7.50
Camp Overton.....	1,168.69				2,386.67			
Camp Vicars.....	317.96				54.66	80.00		
Cotabato.....	1,159.48				887.33	200.00		12.00
Dapitan.....	54.94				180.00			
Dávao.....	377.02				600.00			
Iligan.....	276.57				599.99			8.00
Jolo.....	1,899.86		P0.03		1,896.67	234.00		
Malabang.....	1,479.69				2,800.00			
Matl.....	10.84				63.33			
Parang Parang.....	447.44				580.00			
Slasi.....	15.44				240.00			
Zamboanga.....	2,565.58	6.44			3,200.00	2,107.78		30.00
NEGROS OCCIDENTAL PROVINCE.								
Bacolod.....	830.74	89.54			4.80	315.00		120.00
Bago.....	32.12				120.00			
Binalbagan.....	8.00				25.67			
Cadiz.....	20.00				34.33			
Cauayan.....	1.24				24.33			
Escalante.....	116.76				120.00			
Ilog.....	12.94				59.00			
Isabela.....	45.42				120.00			
Jimamallan.....	3.68				25.00			
Jinigan.....	30.84				120.00			
La Carlota.....	60.36				63.52			
Manapia.....	10.80				34.67			
Murcia.....	29.00				120.00			
Pontevedra.....	39.99				43.93			
Sagay.....	5.30				34.00			
San Carlos.....	144.45				180.00			
Saravia.....	9.78				35.00			
Silay.....	111.18				240.00			
Talisay.....	39.16				120.00			
Valladolid.....	28.56				125.67			
Victorias.....	21.74				120.00			
NEGROS ORIENTAL PROVINCE.								
Ayuquitan.....	7.28				107.00			
Bacon.....	40.66				120.00			
Bais.....	155.30				220.00			
Dauln.....	23.88				107.00			
Dumaguete.....	710.90	3.22			960.00			3.00

TABLE C.—Statement of revenues and expenses of each post-office as reported by auditor—Continued.

Office.	Stamped stock sold.	Postage on second- class matter.	Waste paper sold and miscel- laneous receipts.	Box rents.	Compensation of post- masters.	Compensation of clerks.	Rent.	Miscel- laneous ex- penses.
NEGROS ORIENTAL PROVINCE—cont'd.								
Larena.....	P12.82				P99.66			
Luzuriaga.....	14.72				120.00			
Siquijor.....	7.28				103.66			
Tanjay.....	12.96				108.33			
Tolong.....	20.24				90.00			
NUEVA ECJA PROVINCE.								
Allaga.....	68.02				120.00			
Cabanatuan.....	112.19				145.00			
Cuyapo.....	144.88		P0.02		145.00			
Gapán.....	30.16				120.00			
Licab.....	46.32				120.00			
Pedarranda.....	32.30				120.00			
San Antonio.....	21.40				120.00			
San Isidro.....	470.68				840.00	P240.00		P3.76
San José.....	61.60				120.00			
San Juan de Guimba.....	23.68				120.00			
Talavera.....	14.41				120.00			
Bongabon.....	17.18				120.00			
NUEVA VIZCAYA PROVINCE.								
Bagabag.....	9.98				120.00			
Bambang.....	21.92				110.00			
Bayombong.....	173.45				360.00			
Dupax.....	10.42		.34		120.00			
Solana.....	24.14				120.00			
PAMPANGA PROVINCE.								
Apalit.....	83.66				120.00			
Angeles.....	271.12				589.24			7.00
Arayat.....	131.08				180.00			
Bacolor.....	168.66				360.00	20.00		
Camp Stotsenburg.....	1,548.21				1,200.00			
Candaba.....	85.01				300.00			
Floridablanca.....	21.42				120.00			
Guagua.....	125.85				120.00			
Lubao.....	60.64				120.00			
Mabalacat.....	43.58				76.50			
Macabebe.....	114.68				210.00			
Magalan.....	44.46				120.00			
México.....	183.06				180.00			
Porac.....	33.72				180.00			
San Fernando.....	622.92	P43.82			600.00	225.33		
San Luis.....	64.32				180.00			
Santa Rita.....	16.66				120.00			
Santo Tomás.....	24.10				120.00			
PANGASINÁN PROVINCE.								
Agno.....	36.44		.01		120.00			
Alaminos.....	126.62				240.00			
Alcalá.....	83.98				120.00			
Anda.....	33.86				103.67			
Asiñgan.....	81.34				120.00			
Bani.....	28.10				120.00			
Bautista.....	609.26				720.00			
Bayambang.....	711.01				1,055.01			
Binalonan.....	155.24				180.00			
Binmaley.....	35.76				120.00			
Bolinao.....	80.22				120.00			
Calasiao.....	145.85				225.00			
Dagupan.....	1,384.66		2.50		1,994.41	300.00	P480.00	
Infanta.....	17.04				120.00			
Lingayén.....	719.70				840.00			3.00
Malasiqui.....	71.14				120.00			
Manaoag.....	78.16				180.00			
Mangaldan.....	53.06				180.00			
Mangatarem.....	42.92				120.00			

TABLE C.—Statement of revenues and expenses of each post-office as reported by auditor—Continued.

Office.	Stamped stock sold.	Postage on second- class matter.	Waste paper sold and miscel- laneous re- ceipts.	Box rents.	Compensation of post- masters.	Compensation of clerks.	Rent.	Miscel- laneous ex- penses.
PANGASINAN PROV- INCE—cont'd.								
Pozorrubio.....	P 86.48				P 360.00			
Rosales.....	85.78				120.00			
Salasa.....	34.66				120.00			
San Carlos.....	156.22				120.00			
San Fabián.....	81.64				120.00			
San Isidro.....	39.06				120.00			
San Nicolás.....	15.62				97.33			
San Quintín.....	20.94				98.66			
Sual.....	32.84				120.00			
Tayug.....	131.90				240.00			
Umingan.....	33.10				165.00			
Urdaneta.....	72.10				155.00			
Villasis.....	41.16				120.00			
PALAWAN PROVINCE.								
Coron.....	33.92				120.00			
Cullion.....	22.78				98.33			
Cuyo.....	106.88				480.00			
Puerto Princesa.....	220.30				360.00			
RIZAL PROVINCE.								
Binañonan.....	57.98				120.00			
Calocan.....	128.20				269.66			
Malabon.....	110.25				171.33			
Mariquina.....	167.94				240.00			
Morong.....	22.22				120.00			
Parañaque.....	23.68				120.00			
Passy.....	18.22				120.00			
Paig.....	294.10				415.33			
Pateros.....	37.06				120.00			
Pililla.....	13.00				49.33			
San Felipe Nery.....	15.55				120.00			
San Mateo.....	331.44				280.00			
San Pedro Macati.....	29.35				120.00			
Tanay.....	94.44				120.00			
Taytay.....	2.50				45.00			
ROMBLÓN PROVINCE.								
Romblón.....	232.42				600.00		P 55.00	
SAMAR PROVINCE.								
Allen.....	18.68		P 4.04		180.00			
Balañtiga.....	25.94				120.00			
Basey.....	10.00				120.00			
Borongán.....	250.85				360.00			
Calbayog.....	1,628.54				2,799.99	P 372.50		
Catarman.....	61.82				113.67			
Catbalogan.....	651.80				741.66	116.50	120.00	
Gándara.....	47.12				95.67			
Guluan.....	2.28				40.00			
Lao-ang.....	241.11				360.00			
Orás.....	168.40				120.00			
Taft.....	119.50				150.00			
Villa Real.....	14.46				120.00			
SORSOGÓN PROVINCE.								
Bacon.....	37.80				160.00			
Barcelona.....	29.58				120.00			
Bulan.....	101.08				120.00			
Bulasan.....	42.80				120.00			
Casiguran.....	85.13				120.00			
Castilla.....	4.04				40.00			
Donsol.....	81.40				120.00			
Gubat.....	109.48				120.00			
Irocin.....	82.64				120.00			
Juban.....	30.76				120.00			
Magallanes.....	20.24				120.00			
Matnog.....	226.00				100.00			
Pilar.....	130.48				150.00			
Prieto Diaz.....	9.36				40.00			
Sorsogón.....	873.31		.50	P 228.00	2,000.00	335.00		P 90.00

TABLE C.—Statement of revenues and expenses of each post-office as reported by auditor—Continued.

Office.	Stamped stock sold.	Postage on second-class matter.	Waste paper sold and miscellaneous receipts.	Box rents.	Compensation of postmasters.	Compensation of clerks.	Rent.	Miscellaneous expenses.
SURIGAO PROVINCE.								
Butúan.....	P 25.14				P 145.33			
Surigao.....	408.00				600.00			
TARLAC PROVINCE.								
Bamban.....	44.10				170.00			
Camiling.....	131.60				240.00			
Capas.....	144.62				185.00			
Concepción.....	65.26				120.00			
Moncada.....	108.78				150.00			
Paniqui.....	135.32				165.00			
Pura.....	117.60				165.00			
Tarlac.....	606.10				6 0.00	P 231.33		
Victoria.....	59.31				99.33			
TAYABAS PROVINCE.								
Atimonan.....	253.06				360.00			
Baler.....	42.49				120.00			
Boac.....	150.56				600.00			
Calauag.....	82.14				120.00			
Catanauan.....	15.52				120.00			
Guinayangan.....	91.04				120.00			
Gumaca.....	3.46				44.00			
Infanta.....	32.48				104.33			
Laguinoc.....	7.02				20.00			
López.....	69.99				120.00			
Luchán.....	118.81				180.00			
Lucena.....	1,353.32				2,800.00	335.00	P 380.00	
Mauban.....	69.00				120.00			
Mogpog.....					11.33			
Mulanay.....	56.40				180.00			
Pagbilao.....	49.44				120.00			
Pitogo.....	42.82				120.00			
Sampaloc.....	1.02				43.00			
Santa Cruz.....	53.47				120.00			
Saraya.....	79.26				120.00			
Tayabas.....	83.76				205.00			
Tiaong.....	21.04				120.00			
Torrijos.....	3.64				48.66			
ZAMBALES PROVINCE.								
Botolan.....	12.88				120.00			
Iba.....	163.30				600.00			
Masinloc.....	14.26				120.00			
Olongapo.....	1,610.52				2,000.00			
San Marcelino.....	49.76				195.00			
San Narciso.....	44.71				180.00			
Santa Cruz.....	13.70				118.33			
Subic.....	101.24				300.00			
Grand total.....	222,701.36	P 5,023.48	P 417.79	P 15,152.51	142,547.06	195,211.25	3,694.00	P 6,306.00

Summary.

Revenues:		
Stamped stock sold.....		P 222,701.36
Postage on second-class matter.....		5,023.48
Miscellaneous receipts.....		417.79
Box rents.....		15,152.51
Money-order fees transferred to postal funds.....		30,046.46
Total.....		273,341.60
Expenses:		
Salaries and wages—		
Postmasters.....		142,547.06
Clerks in post-offices.....		195,211.25
Total.....		337,758.31
Contingent expenses—		
Rent.....	P 3,694.00	
Light.....	11.28	
Furniture.....	3,980.20	
Repairs.....	1,023.26	
Stamp agencies, Manila.....	420.00	
Miscellaneous.....	871.26	
Total expenses.....		10,000.00
		247,758.31

TABLE D.—Statement of the money-order business of the Philippine Islands for the fiscal year ending June 30, 1906, as shown by auditor's report.

Office.	Orders issued.	Amount of orders issued.	Fees.	Orders paid.	Amount of orders paid and repaid.
Angeles.....	120	\$4,972.78	\$21.68	34	\$619.28
Aparri.....	1,063	67,569.84	243.09	97	3,378.49
Bacolod.....	665	19,976.50	98.24	143	3,913.50
Bacolor.....	29	1,041.59	4.51	1	100.00
Baguio.....	717	18,536.13	96.33	189	9,309.93
Balanga.....	178	2,667.26	19.16	27	507.69
Bangued.....	110	4,324.16	18.63	10	143.75
Batangas.....	1,939	60,327.82	288.16	467	10,411.72
Bayambang.....	806	14,814.52	93.12	85	2,273.00
Bayombong.....	256	6,658.21	34.31	20	596.44
Boac.....	180	3,481.68	20.21	26	976.77
Cagayan.....	461	23,011.05	90.88	78	3,097.94
Calamba.....	546	11,209.14	64.92	102	3,539.21
Calapan.....	213	6,101.05	30.13	33	1,103.28
Calbayog.....	1,609	55,070.60	251.07	126	3,534.55
Camp Jossman.....	916	16,689.83	104.41	128	3,364.65
Camp Marahui.....	2,066	55,781.95	282.94	231	9,559.87
Camp Overton.....	1,452	53,777.63	236.54	398	19,221.53
Camp Stotsenburg.....	1,484	22,308.52	157.71	141	3,783.23
Cápiz.....	770	23,904.47	114.45	86	3,530.27
Catbalogan.....	631	20,733.74	95.65	101	2,654.23
Cavite.....	3,055	97,023.44	459.32	687	27,590.12
Cebu.....	1,851	57,449.47	273.85	1,011	31,199.96
Cervantes.....	108	2,841.36	14.55	25	1,191.74
Corregidor.....	273	5,606.18	32.69	46	625.98
Cotabato.....	1,606	92,896.96	345.61	274	9,132.42
Cuyo.....	107	6,615.71	24.26	21	1,166.36
Daet.....	174	4,938.80	24.86	27	1,250.35
Dagupan.....	898	34,558.72	151.83	306	10,278.76
Davao.....	219	8,443.69	37.45	65	3,952.97
Dumaguete.....	654	21,682.98	98.92	131	7,383.45
Iba.....	127	2,229.46	14.05	16	644.86
Iligan.....	153	3,717.92	20.00	34	1,214.40
Iligan.....	763	56,959.35	197.79	246	8,733.75
Iloilo.....	2,712	92,394.91	416.79	1,424	45,094.09
Jolo.....	1,872	75,666.79	322.40	426	14,938.78
Laoag.....	869	28,149.64	130.22	160	6,946.68
Legaspi.....	1,821	58,079.39	273.34	281	11,453.82
Lingayén.....	514	9,895.93	60.95	103	3,182.39
Los Baños.....	825	17,156.67	100.36	176	3,833.68
Lucena.....	1,590	39,056.46	207.47	171	6,183.87
Malabang.....	2,664	118,150.89	481.93	348	15,522.65
Malolos.....	396	8,097.37	47.32	51	902.68
Manila.....	29,614	1,515,489.24	5,897.27	32,288	1,372,088.44
Masbate.....	343	7,732.13	42.51	76	4,720.86
Nueva Cáceres.....	803	34,722.87	142.08	102	3,373.52
Olongapo.....	994	26,544.27	136.31	206	6,412.92
Ormoc.....	493	17,067.25	76.70	81	2,275.00
Romblón.....	212	3,714.33	23.69	26	538.36
San Fernando, Pam.....	368	10,057.27	50.36	112	3,285.35
San Fernando, Unión.....	1,343	41,554.72	198.89	212	8,593.81
San Isidro, N. F.....	458	12,225.18	63.00	139	5,320.99
San José, Antique.....	236	5,687.39	30.48	35	1,414.02
Santa Cruz, Laguna.....	319	10,998.83	50.19	112	1,936.15
Sorsogón.....	725	18,052.66	95.76	75	1,940.22
Surigao.....	282	7,588.90	37.89	60	2,808.00
Tacloban.....	1,533	60,521.35	261.20	323	14,072.07
Tagbilaran.....	340	8,652.83	45.37	19	313.14
Tarlac.....	331	8,282.47	44.11	49	1,650.62
Tuguegarao.....	448	15,162.50	69.16	74	1,944.44
Twin Peaks.....	1,914	104,313.02	403.90	286	15,384.15
Vigan.....	677	21,236.04	100.00	164	6,923.55
Zamboanga.....	3,545	179,809.67	701.17	757	31,801.84
Total United States currency.....	84,420	3,444,053.48	14,572.14	43,748	1,784,820.54
or					
Total Philippine currency.....		₱ 6,888,106.96	₱ 29,144.28		₱ 3,569,641.06

U. S. currency.

Amount of deposits received by postmaster Manila from other postmasters.....	\$1,549,518.32
Amount of money-order funds sent postmasters in provinces.....	21,539.24
Money-order fees transferred to postal funds during year.....	15,023.23
Remitted to United States to settle balances.....	1,700,000.00
Amount deposited with treasurer of Philippine Islands account invalid money orders..	5,136.41

TABLE E.—*Inland mail transportation, fiscal year ending June 30, 1905.*

Route No.	Date established.	Between what points.	Mode of transportation.	Frequency of service.	Length of route.	Rate of pay per annum.	Rate of cost per mile traveled.	Traveled during fiscal year or since established.	Amount paid during fiscal year.	Remarks.
					<i>Miles.</i>			<i>Miles.</i>		
501	July 1, 1904	Bangued and Vigan, Ilocos Sur.	Boat	Semiweekly	20.0	₱ 728.00	₱ 0.175	4,160	₱ 728.00	
526	July 1, 1903	Legaspi, Albay, and mail boats.	Foot messenger.	All required	15.0	200.00	0.266	4,680	263.58	
527	Apr. 24, 1904	Legaspi and Ligao, Albay.	Stage	Triweekly	15.0	1,200.00	0.256	4,680	1,200.00	
528	Oct. 1, 1903	Tabaco, Albay, and mail boats.	Foot messenger.	All required	6.0	48.00	0.128	468	12.00	
529	Dec. 16, 1903	Ligao and Polangui, Albay.	do	Triweekly	22.0	240.00	0.073	3,952	60.00	
530	Mar. 3, 1904	Legaspi and Tawi, Albay.	do	Semiweekly	22.0	240.00	0.073	3,952	288.33	Discontinued Sept. 30, 1904. Do Oct. 1, service reduced to 18 miles and cost to ₱ 240 per annum; present rate per mile traveled, ₱ 0.064.
531	May 17, 1904	Guinobatan and Jovellar, Albay	do	Triweekly	10.0	120.00	0.038	780	30.00	
532	May 23, 1904	Legaspi and Albay, Albay.	do	6 times a week.	1.5	144.00	0.159	558	88.70	Discontinued Sept. 30, 1904. Discontinued Oct. 16, 1904; reestablished Mar. 13, 1905.
551	July 1, 1903	Nueva Cáceres and Iriga, Ambos Camarines.	do	Semiweekly	23.0	520.00	0.092	4,784	449.07	
552	Oct. 1, 1903	Nueva Cáceres and mail boats.	do	All required	.....	300.00	.....	.....	150.50	
554	July 1, 1904	Dact, Ambos Camarines, and mail boats.	do	do	.....	180.00	.....	.....	15.00	
555	Aug. 1, 1904	Mercedes and Capalonga, Ambos Camarines.	Foot messenger and boat.	Weekly and semiweekly.	89.0	1,440.00	0.090	14,777	1,320.00	
556	July 1, 1904	Libmanan and Nueva Cáceres, Ambos Camarines.	Foot messenger.	Semiweekly	15.0	120.00	0.038	3,120	120.00	
557	July 18, 1904	Libmanan and Lupi, Ambos Camarines.	do	do	15.0	120.00	0.043	2,272	96.33	
558	July 16, 1904	Lupi and Ragay, Ambos Camarines.	do	do	15.0	120.00	0.038	3,000	115.00	
559	Aug. 20, 1904	Nueva Cáceres and Pasacao, Ambos Camarines.	do	do	20.0	180.00	0.041	3,560	144.75	
560	Sept. 1, 1904	Nueva Cáceres and San José, Ambos Camarines.	do	Weekly	35.0	240.00	0.065	3,080	200.00	
561	.....do.....	Nueva Cáceres and Calabanga, Ambos Camarines.	do	Semiweekly	5.0	120.00	0.116	860	100.00	
562	Jan. 1, 1905	Sipocot and Lupi, Ambos Camarines.	do	do	7.0	90.00	0.062	728	45.00	
563	Dec. 24, 1904	San José, Ambos Camarines, and mail boats (Sabang).	do	All required	8.0	180.00	.....	.....	93.50	Dec. 31, 1904, route divided at Sipocot and cost reduced to ₱ 60 per month; present rate per mile, ₱ 0.054. See route No. 562.

TABLE E.—*Inland mail transportation, fiscal year ending June 30, 1905* Continued.

Route No.	Date established.	Between what points.	Mode of transportation.	Frequency of service.	Length of route.	Rate of pay per annum.	Rate of cost per mile traveled.	Miles traveled during fiscal year or since established.	Amount paid during fiscal year.	Remarks.
564	Feb. 1, 1905	Ragay, Ambos Camarines, and mail boats.	Foot messenger.	Semi-monthly.	8.0	P 48.00	P 0.125	144	P 18.00	
576	July 1, 1903	San José, Antique, and mail boats.	do.	All required.	17.0	120.00		144	34.55	Dec. 29, 1904, reduced to P 100 from P 840 per annum.
601	do.	Dinalupijan and Orón, Bataan.	do.	Tri-weekly.	17.0	600.00	.134	5,304	712.00	Feb. 21, 1905, reduced to P 100 from P 432 per annum.
626	Feb. 7, 1904	Batangas, Batangas, and mail boats.	Carromata.	All required.	39.0	300.00		8,112	1,152.00	July 1, 1905, reduced to P 100 per annum.
627	Apr. 15, 1904	Batangas and Nasugbod, Batangas.	Mounted messenger.	Semi-weekly.	13.0	1,152.00	.142	2,704	394.00	
628	June 1, 1904	Batangas and Rosario, Batangas.	do.	do.	12.0	384.00	.142	2,424	34.33	July 1, 1905, reduced to P 100 per annum.
629	June 20, 1904	Batangas and Cuenca, Batangas.	Foot messenger.	do.	12.0	60.00	.024	2,424	58.33	
630	Aug. 23, 1904	Rosario and San Juan, Batangas.	do.	1 and 2 round trips weekly, alternately.	12.5	108.00	.055	1,075	12.40	
632	June 19, 1904	Dagupan, Pangas, and Twin Peaks.	Carromata.	Tri-weekly.	38.5	3,120.00	.202	14,047	3,094.20	Mar. 25, 1905, service reduced to 32.2 miles, pay reduced to P 10.01 per round trip, Apr. 4, 1905, service increased to daily, June 16, 1905, service reduced to 3 round trips per week, July 1, 1905, routes 632 and 633 combined; rate of pay P 25 per round trip.
663	June 22, 1904	Baguio and Twin Peaks, Benguet.	Foot messenger.	do.	15.0	1,403.00	.201	6,064	1,403.00	Mar. 25, 1905, service increased to 35 miles, rate of pay increased to P 10 per round trip, Apr. 4, 1905, service increased to daily, June 16, 1905, service reduced to 12 round trips per week, June 16, 1905, service reduced to 3 round trips per week, July 1, 1905, combined with route 662.
676	Aug. 20, 1904	Loboc, Bohol, and Laoay, Bohol.	do.	Semi-weekly.	4.0			704	920.00	
677	Oct. 1, 1904	Tubigon and Laoay, Bohol.	Carromata and foot messenger.	do.	53.0	1,200.00	.224	4,154		
678	Mar. 26, 1905	Valencia and Laoay, Bohol.	Foot messenger.	do.	13.5	180.00	.083	766	47.50	

679	Apr. 1, 1905	Valencia and Jagna, Bohol.....	.....do.....	.....do.....	10.0	144.00	.069	520	36.00	Oct. 1, 1904, reduced from 6 to 3 round trips per week and from ₱240 to ₱144 per annum.
701	July 12, 1904	Matolos, Bulacán, and mail trains.....	.....do.....	All required.....	6.0	144.00	.072	2,340	168.00	Discontinued July 31, 1904.
703	July 1, 1903	Matolos and Hagonoy, Bulacán.....	.....do.....	Triweekly.....		120.00			10.00	Discontinued Sept. 30, 1904.
704	July 1, 1904	Bulacán, Bulacán, and mail trains.....	.....do.....	All required.....		120.00			30.00	Do.
705	Jan. 12, 1904	Calumpit, Bulacán, and mail trains.....	.....do.....	.....do.....		180.00			45.00	Discontinued July 1, 1905.
706	July 1, 1904	Baliuag, Bulacán, and mail trains.....	.....do.....	Triweekly.....	8.0	166.00	.062	2,288	143.00	
707	Aug. 1, 1904	Baliuag and Angat, Bulacán.....	.....do.....	All required.....		72.00			72.00	
726	July 1, 1903	Tuguegarao, Cagayán, and mail boats.....	.....do.....	.....do.....		60.00			66.80	Oct. 1, 1904, reduced from ₱240 to ₱60 per annum.
727	Oct. 1, 1903	Aparri, Cagayán, and mail boats.....	.....do.....	.....do.....		5,400.00	.433	3,120	1,350.00	Discontinued Sept. 30, 1904.
728	Apr. 1, 1904	Alcalá, Cagayán, and Cauayan, Isabela.....	Boat (Barangay).....	4 round trips per month.....	130.0	60.00	.115	624	72.00	Nov. 1, 1904, reduced from ₱96 to ₱60 per annum.
729	May 9, 1904	Enrile and Tuguegarao, Cagayán.....	Foot messenger.....	Weekly.....	6.0	60.00	.037	570	21.33	Discontinued Nov. 8, 1904.
730	June 1, 1904	Peta Blanca and Tuguegarao, Cagayán.....	.....do.....	.....do.....	15.0	60.00	.083	380	35.48	Discontinued Nov. 13, 1904.
731	June 7, 1904	Baggao and Alcalá, Cagayán.....	.....do.....	.....do.....	10.0	96.00	.155	2,300	360.00	Dec. 1, 1904, increased from 4 round trips per month to 1 round trip per week.
732	June 14, 1904	Piat and Tuguegarao, Cagayán.....	Mounted messenger.....	.....do.....	23.0	360.00			570.00	July 1, 1905, routes 733, 739, 740, and 904 consolidated with route 741, Aparri, Cagayán, to Cauayan, Isabela, at rate of ₱7,500 per annum.
733	Mar. 6, 1905	Aparri and Alcalá, Cagayán.....	Boat (Barangay).....	.....do.....	35.0	1,800.00	.478	1,190		Mar. 1, 1905, reduced from ₱480 to ₱420 per annum.
734	July 13, 1904	Aparri and Abulug, Cagayán.....	Mounted messenger.....	.....do.....	14.0	300.00	.207	1,400	290.00	Discontinued Feb. 19, 1905.
735	July 11, 1904	Abulug and Sánchez Mira, Cagayán.....	Boat.....	.....do.....	25.0	420.00	.175	2,550	446.66	
736	.....do.....	Claveria and Sánchez Mira, Cagayán.....	Foot messenger.....	Semiweekly.....	10.0	168.00	.075	1,360	102.20	
737	Oct. 10, 1904	Amulung, Cagayán, and mail boats.....	.....do.....	All required.....		60.00			18.50	Do.
738	.....do.....	Iguig, Cagayán, and mail boats.....	.....do.....	.....do.....		60.00			18.50	July 1, 1905, routes 733, 739, 740, and 904 consolidated with route 741, Aparri, Cagayán, to Cauayan, Isabela, at rate of ₱7,500 per annum.
739	Jan. 25, 1905	Tuguegarao and Iligan, Isabela.....	Pack train.....	Weekly.....	60.0	2,160.00	.354	2,640	936.00	
740	Feb. 7, 1905	Tuguegarao and Alcalá, Cagayán.....	Boat (Barangay).....	.....do.....	25.0	1,848.00	.696	1,050	731.50	Gratuitous.
742	July 1, 1904	Aparri, Cagayán, and Cauayan, Isabela.....	C. G. S. "Sentinel".....	4 times month.....	165.0			6,560		Discontinued Sept. 30, 1904.
751	July 1, 1903	Cápiz, Cápiz, and mail boats.....	Foot messenger.....	All required.....		180.00			45.00	Discontinued Nov. 30, 1904.
752	.....do.....	Calivo, Cápiz, and mail boats.....	.....do.....	.....do.....		240.00			100.00	Mar. 21, 1905, increased to daily and from ₱72 to ₱144 per annum.
753	Feb. 13, 1905	Calivo and New Washington, Cápiz.....	.....do.....	Daily.....	6.0	144.00	.036	1,308	47.60	

TABLE E.—*Inland mail transportation, fiscal year ending June 30, 1905—Continued.*

Route No.	Date established.	Between what points.	Mode of transportation.	Frequency of service.	Length of route.	Rate of pay per annum.	Rate of cost per mile traveled.	Traveled during fiscal year or since established.	Amount paid during fiscal year.	Remarks.
776	July 1, 1904	Cavite and Bacoor, Cavite.....	Banca.....	Daily.....	Miles. 2.5	P 180.00	P 0.175	1,095	P 190.33	Sept. 11, 1904, reduced from P 264 to P 180 per annum.
777	July 1, 1903	Naic and Maragondon, Cavite.....	Foot messenger.....	Triweekly.....	5.0	120.00	.086	1,560	135.00	Oct. 1, 1904, reduced from P 180 to P 120 per annum.
779	Nov. 5, 1903	Rosario and San Francisco, Cavite.....	.....do.....	6 times week.....	3.0	144.00	.073	318	24.00	Discontinued Aug. 31, 1904.
780	Dec. 16, 1903	Naic and Indang, Cavite.....	.....do.....	Triweekly.....	14.0	180.00	.043	3,360	146.50	Discontinued Aug. 31, 1904; reestablished Nov. 14, 1904.
781	Apr. 20, 1904	Carmona and Bifan, Cavite.....	.....do.....	Semiweekly.....	3.0	72.00	.110	114	12.60	Discontinued Sept. 3, 1904.
782	May 8, 1904	Bacoor and Imus, Cavite.....	Carromata.....	Daily.....	8.0	240.00	.039	5,840	229.00	Aug. 1, 1904, increased from P 180 to P 240 per annum.
784	June 1, 1904	Indang and Alfonso, Cavite.....	Foot messenger.....	Triweekly.....	4.0	96.00	.104	886	93.73	Sept. 1, 1904, reduced from 3 to 2 round trips per week.
785	July 1, 1904	Cavite and San Francisco, Cavite.....	Military wagon.....	.....do.....	10.0	.....	.....	1,460	.....	Gratuitous; discontinued Dec. 15, 1904.
786	Dec. 16, 1904	San Francisco, Cavite, and mail boats (Sulinas).....	Foot messenger.....	Daily, except Sunday.....	4.0	240.00	.114	1,136	130.00	Discontinued Jan. 31, 1905; reestablished Apr. 20, 1905.
787	Dec. 14, 1904	Silang and Das Marinas, Cavite.....	.....do.....	Triweekly.....	9.0	144.00	.049	954	47.20	May 24, 1906, reduced from P 240 to P 180 per annum.
801	July 1, 1903	Cebu, Cebu, and mail boats.....	.....do.....	All required.....	.....	180.00	.....	.....	217.05	July 1, 1905, reduced to P 2,000 per annum.
802	Aug. 1, 1904	Carar and Tuburan and Samboan, Cebu.....	Mounted and foot messenger.....	Semiweekly.....	109.0	4,460.04	.197	20,710	4,088.37	Discontinued July 31, 1904.
802	Nov. 16, 1903	Cebu and Dumanjug, Cebu.....	Foot messenger.....	Weekly.....	40.0	180.00	.047	320	15.00	Do.
803	July 25, 1904	Cebu and Daanbantayan, Cebu.....	Carromata and foot messenger.....	Semiweekly.....	78.0	3,120.00	.180	15,288	2,912.00	Do.
804	July 28, 1904	Cebu and Oslob, Cebu.....	.....do.....	.....do.....	69.0	2,829.96	.198	13,662	2,617.71	Do.
805	Dec. 16, 1904	San Remigio and Bantayan, Cebu.....	Boat.....	Weekly.....	15.0	240.00	.154	870	134.00	Do.
826	Oct. 1, 1903	Laag, Ilocos Norte, and mail boats.....	Foot messenger.....	All required.....	.....	200.00	.....	.....	12.00	Do.
827	July 1, 1903	Laag and Salomague, Ilocos Norte.....	Carabao cart.....	Semiweekly.....	40.0	1,560.00	.203	8,320	1,680.00	Oct. 1, 1904, reduced from P 2,080 to P 1,560 per annum.
828	Apr. 1, 1904	Laag and Dingras, Ilocos Norte.....	Foot messenger.....	.....do.....	12.0	144.00	.042	3,432	144.00	May 1, 1905, reduced from 3 to 2 round trips per week.
829	Apr. 11, 1904	Laag and Pasauquin, Ilocos Norte.....do.....do.....	11.0	144.00	.083	2,288	144.00	Do.
830	Aug. 9, 1904	Batac and Paoy, Ilocos Norte.....do.....do.....	5.0	84.00	.079	940	75.13	Do.

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831	June 14, 1905	Bangui and Pasuquin, Ilocos Norte.	do.	Weekly	36.0	60.00	.013	216	2.83	
851	May 1, 1904	Vigan, Ilocos Sur, and mail boats.	Carromata.	All required		360.00			360.00	
853	July 1, 1903	Vigan and Salomague, Ilocos Sur.	Carabao cart.	Semiweekly	18.0	520.00	.193	3,744	724.00	June 1, 1905, reduced from ₱728 to ₱520 per annum.
854	do.	Vigan and San Esteban, Ilocos Sur.	do.	do.	23.5	728.00	.148	4,794	714.00	
855	do.	Candon and San Esteban, Ilocos Sur.	Foot messenger.	do.	8.0	120.00	.158	1,664	262.50	Apr. 16, 1905, reduced from ₱300 to ₱120 per annum.
856	Oct. 1, 1903	San Esteban and mail boats.	do.	All required		60.00			38.00	Apr. 1, 1905, reduced to ₱1.50 per round trip.
857	Apr. 1, 1904	Candon, Ilocos Sur, and Bangar, La Union.	Mounted messenger.	Semiweekly	24.0	360.00	.072	4,992	360.00	
877	May 1, 1904	Hollo, Hollo, and mail boats.	Foot messenger.	All required		192.00			192.00	
901	Apr. 1, 1904	Echague and Cauayan, Isabela.	do.	Weekly	18.0	208.00	.111	576	64.00	Oct. 18, 1904, consolidated with route 904.
902	May 19, 1904	Cabangan Nuevo and Santo Tomas, Isabela.	do.	do.	16.0	180.00	.072	832	60.00	Discontinued Jan. 1, 1905.
903	May 23, 1904	Naguilian and Gamot, Isabela.	do.	do.	4.0	60.00	.136	128	17.44	Discontinued Oct. 12, 1904.
904	Oct. 19, 1904	Iligan and Echague, Isabela.	Mounted messenger.	do.	40.0	720.00	.193	1,520	294.00	Jan. 1, 1905, reduced from ₱720 to ₱300 per annum.
905	Oct. 16, 1904	Tumauini, Isabela, and mail boats.	Foot messenger.	All required		60.00			16.50	Discontinued Jan. 24, 1905.
906	Nov. 1, 1904	Iligan, Isabela, and mail boats.	do.	do.		48.00			10.27	Discontinued Jan. 17, 1905.
907	Jan. 16, 1905	Cauayan and Echague, Isabela.	Mounted messenger.	Weekly	18.0	240.00	.208	864	109.33	
926	July 1, 1903	Santa Cruz, Laguna, and mail boats.	Foot messenger.	All required		180.00			180.00	
927	do.	Calamba, Laguna, and mail boats.	do.	do.		96.00			68.50	
928	do.	Bay, Laguna, and mail boats.	do.	do.		180.00			50.00	Apr. 1, 1905, increased from ₱60 to ₱96 per annum.
929	do.	Bay and San Pablo, Laguna.	Mounted messenger.	Triweekly	10.5	240.00	.073	3,276	240.00	Discontinued Oct. 10, 1904.
930	Oct. 1, 1903	Bifan, Laguna, and mail boats.	Foot messenger.	All required		60.00			15.00	Discontinued Oct. 1, 1904.
932	Jan. 1, 1904	Santa Rosa and mail boats.	do.	do.		96.00			96.00	
933	Mar. 14, 1904	Santa Cruz, Laguna, and Lucban, Tayabas.	Mounted messenger.	Semiweekly	18.0	1,200.00	.320	3,744	1,188.88	July 1, 1905, reduced to ₱960 per annum.
934	Apr. 1, 1904	Pagsanjan and Luisiana, Laguna.	Foot messenger.	do.	8.0	120.00	.071	528	37.66	Discontinued Oct. 23, 1904.
935	do.	Santa Cruz and Lumban, Laguna.	do.	Daily	6.0	120.00	.062	2,496	155.50	Oct. 26, 1904, reduced 3 miles and from ₱180 to ₱120 per annum.
936	Mar. 28, 1904	Iligo and Nagsariang, Laguna.	do.	Semiweekly	2.0	72.00	.173	128	22.20	Discontinued Oct. 21, 1904.
937	do.	Mayjayay and Nagsariang, Laguna.	do.	do.	4.5	120.00	.131	1,056	138.00	Nov. 16, 1904, changed San Pablo to Mayjayay; reduced from ₱168 to ₱120 per annum.
938	Mar. 1, 1904	Siniloan and Pangit, Laguna.	do.	do.	3.0	48.00	.077	624	48.00	
939	May 1, 1904	Pila and Santa Cruz, Laguna.	do.	Triweekly	6.0	96.00	.631	624	32.00	Discontinued Oct. 31, 1904.
940	June 1, 1904	Pangit and Pacts, Laguna.	do.	do.	3.0	78.00	.083	836	78.00	
941	Apr. 1, 1904	Siniloan and Mablat, Laguna.	do.	Semiweekly	3.0	24.00	.037	210	7.80	Discontinued Oct. 27, 1904.
942	July 5, 1904	Los Baños and mail boats.	do.	All required		60.00			59.33	
943	July 1, 1904	Calamba and Batangas.	Military wagon.	Semiweekly	35.0			7,280		Gratuitous, increased July 1, 1905, to 3 round trips per week.

TABLE E.—*Inland mail transportation, fiscal year ending June 30, 1905—Continued.*

Route No.	Date established.	Between what points.	Mode of transportation.	Frequency of service.	Length of route.	Rate of pay per mile per annum.	Rate of cost per mile traveled.	Traveled during fiscal year since established.	Amount paid during fiscal year.	Remarks.
961	Jan. 1, 1904	San Fernando and Santo Tomás, La Unión Province.	Mounted messenger.	Semiweekly	Miles. 23.0	P 540.00	P 0.108	Miles. 5,382	P 585.00	Oct. 1, 1904, reduced to semi-weekly and from P 720 to P 540 per annum.
962	.....do.....	San Fernando and Bangar, Unión.	.....do.....	.....do.....	25.0	540.00	.100	5,850	585.00	Do.
963	Feb. 8, 1904	Balaang and Namacpacan, Unión.	Foot messenger	.....do.....	3.0	60.00	.122	858	105.00	Apr. 1, 1905, reduced to semi-weekly and from P 120 to P 60 per annum.
964	May 1, 1904	San Fernando and mail boats.	.....do.....	All required	.....	180.00	.....	.....	180.00	Apr. 1, 1905, reduced to semi-weekly and from P 180 to P 120 per annum.
965	June 1, 1904	Naguilian and Bauang, Unión.	.....do.....	Semiweekly	4.0	120.00	.118	1,144	135.00	.....
966	Apr. 1, 1905	Lubao and Agoo, La Unión.	.....do.....	.....do.....	5.0	60.00	.087	260	15.00	Oct. 1, 1904, changed from not to exceed P 225 per quarter to P 540 per annum.
976	July 1, 1904	San Esteban, Ilocos Sur, and Cervantes, Lepanto-Bontoc.	.....do.....	Weekly	30.0	540.00	.166	3,120	518.20	Oct. 1, 1904, changed from not to exceed P 60 per quarter to P 60 per annum.
977	Oct. 5, 1903	Bontoc and Cervantes, Lepanto-Bontoc.	.....do.....	.....do.....	20.0	60.00	.029	2,080	61.00	.....
978	Aug. 20, 1904	Alliem, Lepanto-Bontoc, and Bangar, La Unión.	.....do.....	Semiweekly	8.0	96.00	.068	1,424	82.93	.....
1001	July 1, 1903	Tacloban, Leyte, and mail boats.	.....do.....	All required	.....	120.00	.....	.....	100.00	Dec. 1, 1904, increased from P 72 to P 120 per annum.
1002	.....do.....	Ormoc, Leyte, and mail boats.	.....do.....	.....do.....	.....	60.00	.....	.....	60.00	.....
1003	Oct. 1, 1903	Maasin, Leyte, and mail boats.	.....do.....	.....do.....	.....	60.00	.....	.....	60.00	.....
1026	May 16, 1904	San Jacinto and Talisay, Masbate.	.....do.....	Weekly	11.0	180.00	.157	286	45.00	Oct. 1, 1904, consolidated with route 1028.
1027	May 16, 1904	Masbate and Cataingan, Masbate.	Mounted messenger.	.....do.....	38.0	360.00	.104	3,024	316.66	.....
1028	May 25, 1904	Masbate and Talisay	Boat and foot messenger.	.....do.....	9.0	360.00	.192	1,794	345.00	.....
1030	June 9, 1904	Masbate and Milagros, Masbate.	Foot messenger	.....do.....	12.0	240.00	.192	1,248	239.99	.....
1031	June 21, 1904	Milagros and Pulanduta, Masbate.	.....do.....	.....do.....	45.0	240.00	.081	4,680	240.00	.....
1032	Aug. 1, 1904	Masbate and Aroroy, Masbate.	.....do.....	.....do.....	25.0	240.00	.091	2,400	220.00	.....
1033	July 1, 1904	Milagros and Mandolon, Masbate.	.....do.....	.....do.....	15.0	180.00	.115	1,560	180.00	.....
1076	June 9, 1905	Cagayán, Misamis, and mail boats.	Carromata.	All required	360.00	22.00

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TABLE E.—*Inland mail transportation, fiscal year ending June 30, 1905—Continued.*

Route No.	Date established.	Between what points.	Mode of transportation.	Frequency of service.	Length of route.	Rate of pay per annum.	Rate of cost per mile traveled.	Traveled during fiscal year or since established.	Amount paid during fiscal year.	Remarks.
					Miles.			Miles.		
1156	June 12, 1904	Bongabon and Cabanatuan, Nueva Ecija	Foot messenger	Semiweekly.	18.0	₱ 120.00	₱ 0.032	3,744	₱ 120.00	
1157	do.	Aliaga and Cabanatuan, Nueva Ecija.	do.	do.	9.0	96.00	.051	1,872	96.00	
1158	June 13, 1904	Aliaga and Licab, Nueva Ecija.	do.	do.	5.0	96.00	.092	1,040	96.00	
1159	July 1, 1903	Cabanatuan and San Isidro, Nueva Ecija.	Military wagon.	do.	14.0			2,912		Gratuitous.
1160	Aug. 20, 1904	Calumpit, Bulacán, and San Isidro, Nueva Ecija.	Launch	Triweekly.	40.0	1,200.00	.099	7,360	728.98	Discontinued Apr. 1, 1905 (see route 1217).
1161	Jan. 15, 1905	San Isidro, Nueva Ecija, and Arayat, Pampanga.	Carromata	Weekly.	18.0	364.00	.195	396	77.00	Discontinued Mar. 31, 1905.
1162	Apr. 4, 1905	San Isidro and mail trains.	do.	Daily.		240.00			76.00	May 1, 1905, reduced from ₱ 490 to ₱ 240 per annum.
1176	Sept. 26, 1904	Bayombong, Nueva Vizcaya, and Tayug, Pangasinan.	Mounted messenger.	Weekly.	65.0	1,040.00	.163	5,200	848.00	Jan. 16, 1905, increased from ₱ 780 to ₱ 1,040 per annum.
1178	May 16, 1904	Bayombong and Bagabag, Nueva Vizcaya.	do.	do.	11.0	156.00	.136	1,122	153.00	
1201	July 1, 1903	San Fernando and Guegua, Pampanga.	Carromata	Daily.	12.0	780.00	.106	1,512	161.54	Sept. 1, 1904, reduced to 3 round trips per week, at ₱ 360 per annum. Discontinued Oct. 4, 1904.
1202	do.	Guegua and Lubao, Pampanga.	Foot messenger.	6 round trips per week.	3.0	144.00	.078	306	24.00	Discontinued Aug. 31, 1904.
1203	do.	Angles and mail trains.	do.	All required.		180.00			8.00	Discontinued July 16, 1904.
1204	Feb. 15, 1903	San Fernando, Pampanga, and San Isidro, Nueva Ecija.	Carromata	Triweekly.	28.0	1,560.00	.111	2,104	234.67	Aug. 17, 1904, service changed to San Fernando and Mexico, Pampanga, foot messenger, triweekly, 4 miles, at the rate of ₱ 120 per annum.
1205	June 1, 1904	Angles and Porac, Pampanga.	Foot messenger.	Daily.	7.0	96.00	.018	5,110	96.00	Discontinued June 30, 1905 (see route 1217).
1206	Mar. 1, 1904	Calumpit and Candaba, Pampanga.	Launch	Triweekly.	14.0	360.00	.083	3,612	300.00	
1207	do.	Apalit, Pampanga, and mail trains.	Foot messenger.	All required.		120.00			119.99	
1208	Feb. 1, 1904	San Fernando and mail trains.	do.	do.		168.00			168.00	
1209	May 15, 1904	Macabebe and Calumpit, Pampanga.	do.	Daily.	3.0	60.00	.027	2,190	60.00	
1210	May 3, 1904	Magalan and Angeles Pampanga.	do.	Triweekly.	7.0	120.00	.065	2,184	120.00	

1211	June 8, 1904	Santa Rita and Bacolor, Pampanga.	do.	do.	3.0	96.00	.094	1,170	110.00	Sept. 1, 1904, reduced from daily to triweekly and from ₱ 180 to ₱ 96 per annum.
1212	Aug. 1, 1904	Porac and Florida Blanca, Pampanga.	do.	Daily.	8.0	120.00	.021	5,344	113.50	
1213	Oct. 1, 1904	San Fernando and Bacolor, Pampanga.	Carromata.	6 times a week.	4.0	180.00	.058	1,872	110.00	Mar. 1, 1905, increased from ₱ 120 to ₱ 180 per annum.
1214	Oct. 5, 1904	Gaiguan and Bacolor, Pampanga.	Foot messenger.	do.	4.0	96.00	.033	2,152	70.83	
1215	do	Guagua and Lubao, Pampanga.	do.	4 times a week.	4.0	96.00	.058	1,216	70.83	
1217	Apr. 1, 1905	Arayat and Calumpit, Pampanga.	Launch.	Triweekly.	20.0	600.00	.006	1,560	150.00	
1226	July 1, 1903	Dagupan, Pangasinan, and mail trains.	Carabao cart.	All required.		225.00			228.20	
1227	do	Dagupan and Lingayen, Pangasinan.	Boat.	Daily.	6.0	720.00	.164	4,380	720.00	
1228	Aug. 15, 1903	Pozorrubio and Binalonan, Pangasinan.	Foot messenger.	Triweekly.	8.0	180.00	.083	2,496	209.00	Oct. 1, 1904, reduced from ₱ 312 to ₱ 180 per annum.
1229	Feb. 22, 1904	Umingan and Tayug, Pangasinan.	do.	Semiweekly.	12.0	260.00	.104	504	52.50	Sept. 26, 1904, consolidated with route 1233.
1230	Feb. 1, 1904	Urdaneta and Binalonan, Pangasinan.	do.	Triweekly.	8.0	180.00	.085	2,496	213.00	Oct. 1, 1904, reduced from ₱ 312 to ₱ 180 per annum.
1231	do	Bautista and mail trains.	do.	All required.		120.00			120.00	Discontinued Sept. 30, 1904.
1232	do	Calasiao, Pangasinan, and mail trains.	do.	do.		96.00			24.00	
1233	Feb. 19, 1904	Tayug and Bautista, Pangasinan.	Carabao cart.	Semiweekly.	38.0	1,300.00	.134	8,004	1,071.25	Sept. 26, 1904, increased by 12 miles service reduced from triweekly to semiweekly; rate of pay changed from ₱ 730 to ₱ 1,300 per annum; see route 1229.
1234	Apr. 1, 1904	Alaminos and Anda, Pangasinan.	Banca.	Weekly.	10.0			1,040		Furnished by postmaster.
1235	May 1, 1904	Lingayen and Infanta, Pangasinan.	Mounted and foot messenger.	Semiweekly and triweekly.	34.7	978.00	.088	13,208	1,163.00	May 1, 1905, reduced from ₱ 1,200 to ₱ 978 per annum.
1236	do	Lingayen and Mangataram, Pangasinan.	Mounted messenger.	Semiweekly.	21.5	300.00	.067	4,472	300.00	
1237	do	San Isidro and Bolinao, Pangasinan.	do.	do.	37.0	570.00	.065	7,696	745.00	May 1, 1905, reduced from ₱ 780 to ₱ 570 per annum.
1238	do	Lingayen and Binmaley, Pangasinan.	Foot messenger.	Triweekly.	3.0	60.00	.065	1,160	75.00	Oct. 1, 1904, reduced from 6 round trips per week to triweekly and from ₱ 120 to ₱ 60 per annum.
1239	do	San Fabian and Magaldan, Pangasinan.	do.	do.	5.0	78.00	.050	1,550	77.50	
1240	June 1, 1904	Asingan and Binalonan, Pangasinan.	do.	do.	8.0	180.00	.072	2,496	180.00	
1241	July 1, 1904	Rosales and Villasis, Pangasinan.	do.	Semiweekly.	3.0	96.00	.153	714	109.47	Oct. 12, 1904, reduced from triweekly to semiweekly and from ₱ 144 to ₱ 96 per annum.
1276	July 1, 1903	Paig, Rizal, and mail boats.	do.	All required.		120.00			65.00	Discontinued Jan. 16, 1905.
1277	do	Manila and Paranaque, Rizal.	Carromata.	Semiweekly.	6.0	120.00	.096	1,248	120.00	
1278	do	Malabon and Calocan, Rizal.	Foot messenger.	Daily.	2.0	96.00	.066	1,460	96.00	
1279	Jan. 27, 1904	San Pedro, Rizal, and Manila.	Carromata.	Triweekly.	4.0	96.00	.077	1,248	96.00	
1280	May 6, 1904	San Felipe, Rizal, and Manila.	do.	do.	4.0	96.00	.077	1,248	96.00	

TABLE E.—*Inland mail transportation, fiscal year ending June 30, 1905—Continued.*

Route No.	Date established.	Between what points.	Mode of transportation.	Frequency of service.	Length of route.	Rate of pay per annum.	Rate of cost per mile traveled.	Traveled during fiscal year or since established.	Amount paid during fiscal year.	Remarks.
1281	May 12, 1904	Pasig and Pateros, Rizal.....	Foot messenger.....	Triweekly.....	Miles. 2.0	P72.00	P0.041	Miles. 3,268	P134.80	Nov. 17, 1904, service discontinued between Pasig and Tay-lay, a reduction of 6 miles in length of route. Rate of pay reduced from P240 to P46 per annum. Discontinued Nov. 30, 1904.
1282	May 16, 1904	Tanay and Piñilla, Rizal.....	do.....	do.....	4.0	80.00	.086	280	25.00	
1282	Mar. 1, 1905	Bunayogan and mail boats.....	do.....	All required.....		36.00			12.00	
1283	May 1, 1905	Tanay, Rizal, and mail boats.....	do.....	do.....		46.00			8.00	
1286	July 1, 1903	Catalogan, Samar, and mail boats.....	Boat.....	do.....		180.00			48.50	Discontinued Oct. 7, 1904.
1328	Apr. 1, 1904	Catalogan and Villa Real, Samar.....	Boat.....	Weekly.....	28.0	144.00	.087	416	24.00	Discontinued Aug. 31, 1904.
1329	Feb. 16, 1904	Romonan and Llorente, Samar.....	Foot messenger.....	do.....	18.0	144.00	.086	1,664	144.00	Discontinued Nov. 30, 1904.
1330	Mar. 4, 1904	Allen, Capul, and Luvareta.....	do.....	do.....	18.0	180.00	.111	672	75.00	Oct. 1, 1904, reduced from P240 to P144 per annum; discontinued Mar. 31, 1905.
1331	Feb. 16, 1904	Loang, Catubig, and Pambujan (Samar Province).....	do.....	do.....	22.0	144.00	.061	1,716	105.00	Discontinued Oct. 31, 1904.
1332	Mar. 14, 1904	Tacloban, Leyte, and Balaodiga, Samar.....	Foot messenger and boat.....	do.....	30.0	300.00	.103	780	80.83	
1333	May 1, 1904	Boronagan and Orda, Samar.....	Foot messenger.....	Trimonthly.....	32.0	300.00	.120	2,240	290.00	Discontinued Oct. 31, 1904 (see route 1368).
1351	July 1, 1904	Sorsogon, Sorsogon, and wharf.....	do.....	All required.....		180.00			174.50	
1352	do.....	Bacón and Sorsogon, Sorsogon.....	do.....	6 times per week.....	6.0	180.00	.049	1,224	60.00	
1353	July 21, 1904	Barcelona and Sorsogon, Sorsogon.....	do.....	Semi-weekly and triweekly.....	17.0	300.00	.063	1,424	90.00	Discontinued Oct. 31, 1904 (see routes 1361 and 1362).
1354	July 1, 1904	Casiguran and Irosin, Sorsogon.....	do.....	Triweekly.....	18.0	300.00	.064	1,836	100.00	Discontinued Oct. 31, 1904 (see route 1363).
1355	do.....	Irosin and Magallanes, Sorsogon.....	do.....	do.....	22.0	360.00	.063	2,244	120.00	Discontinued Oct. 31, 1904 (see route 1365).
1356	do.....	Barcelona and Irosin, Sorsogon.....	do.....	do.....	20.0	300.00	.062	840	52.50	Discontinued Oct. 31, 1904 (see route 1364).
1357	do.....	Bulacan and Matnog, Sorsogon.....	do.....	Weekly.....	20.0	180.00	.080	360	32.50	Discontinued Sept. 30, 1904.
1358	do.....	Prieto Diaz and Gubat, Sorsogon.....	do.....	Semi-weekly.....	5.0	120.00	.115	280	30.00	Do.
1359	do.....	Pilar and Donsoi, Sorsogon.....	do.....	Triweekly.....	10.0	180.00	.077	780	60.00	Discontinued Oct. 31, 1904 (see route 1369).
1360	Nov. 1, 1904	Boat landing, Sorsogon and coast guard cutters.....	Launch.....	All required.....		120.50			120.50	

1361	Feb. 1, 1905	Foot messenger	Semiweekly	12.0	180.00	.071	1,056	75.00	
1362	do	do	do	6.0	120.00	.064	528	50.00	
1363	Feb. 6, 1905	do	do	18.0	240.00	.064	1,512	96.67	
1364	Feb. 1, 1905	do	do	10.0	120.00	.057	880	50.00	
1365	do	do	do	11.0	120.00	.051	968	50.00	
1366	do	do	do	11.0	120.00	.051	968	50.00	
1367	do	do	do	15.0	120.00	.038	780	30.00	Discontinued Apr. 30, 1905
1368	Feb. 15, 1905	do	Triweekly	6.0	180.00	.063	720	67.00	
1369	do	do	do	10.0	120.00	.056	800	45.00	
1376	July 1, 1903	do	All required	180.00	180.00			96.00	
1401	do	do	do	180.00	180.00			180.00	
1402	Dec. 1, 1903	do	do	24.00	60.00			15.00	
1403	May 1, 1904	do	do	6.0	96.00	.051	1,872	96.00	Discontinued Sept. 30, 1904.
1404	June 1, 1904	do	do	10.0	144.00	.046	3,120	144.00	Do.
1405	do	do	do	10.0	144.00			144.00	
1406	Oct. 1, 1904	do	do	8.0	120.00	.049	1,872	92.00	
1426	Apr. 1, 1904	Mounted messenger and banca.	All required	480.00	480.00			470.00	
1427	July 1, 1903	Carromata and banca.	do	180.00	180.00			71.90	
1428	do	Foot messenger	Weekly	12.0	192.00	.163	1,248	204.00	Oct. 1, 1904, reduced from P 240 to P 192 per annum.
1429	do	do	do	16.0	260.00	.156	84	10.00	Discontinued July 13, 1904.
1430	Jan. 16, 1904	Boat	Semimonthly	65.0	480.00	.129	5,200	671.67	Oct. 1, 1904, reduced from P 1,140 to P 960 per annum weekly service, Nov. 1, 1904, from P 960 to P 480.
1431	July 1, 1904	Foot messenger	Weekly and semiweekly	23.0	180.00	.057	3,120	180.00	June 1, 1905, reduced from P 260 to P 120 per annum.
1432	May 6, 1904	do	do	15.0	240.00	.076	3,120	240.00	
1434	Feb. 3, 1904	do	do	12.0	120.00	.177	1,248	222.00	
1435	May 21, 1904	do	do	8.0	120.00	.072	1,664	120.00	
1436	June 1, 1904	do	do	10.0	192.00	.062	2,080	192.00	
1437	July 1, 1904	do	do	33.0	180.00	.053	960	52.50	Discontinued Oct. 15, 1904.
1438	July 19, 1904	do	do	10.0	96.00	.140	240	33.60	Discontinued Nov. 26, 1904.
1439	July 29, 1904	do	do	10.0	104.00	.080	960	77.00	Jan. 16, 1905, increased from P 52 to P 104 per annum.
1440	July 14, 1904	do	do	21.0	360.00	.082	4,200	348.00	
1451	May 1, 1904	Carabao cart	Weekly	42.0	2,080.00	.476	4,284	2,040.00	May 17, 1905, increased from weekly to semiweekly and pay reduced from P 300 to P 180 per annum.
1452	Oct. 1, 1903	Banca	All required	120.00	120.00			120.00	
1453	June 1, 1904	Foot messenger	Semiweekly	18.0	180.00	.132	2,160	285.33	May 17, 1905, increased from P 80 to P 96 per annum.
1454	do	do	Weekly	15.0	96.00	.108	1,560	169.23	

TABLE E.—*Inland mail transportation, fiscal year ending June 30, 1905—Continued.*

Route No.	Date established.	Between what points.	Mode of transportation.	Frequency of service.	Length of route.	Rate of pay per annum.	Rate of cost per mile traveled.	Traveled during fiscal year or since established.	Amount paid during fiscal year.	Remarks.
1455	Aug. 16, 1904	Infanta, Pangasinan, and Santa Cruz, Zambales.	Foot messenger	Semitweekly.	Miles. 3.0	P 96.00	P 0.175	Miles. 480	P 84.00	
1476	Mar. 24, 1904	Iligan, Moro and mail boats.	Foot messenger and banca.	All required		120.00			83.00	
1477	Apr. 14, 1904	Iligan and Camp Overton, Moro.	Boat.	Daily	3.0	180.00	.082	1,800	147.50	
1478	Feb. 1, 1905	Mati and Baganga, Moro.	Foot messenger	Semitmonthly	80.0	96.00	.050	1,600	8.50	
1501	July 1, 1904	Manila and mail boats		All required					3,195.49	
401	.....do.....	Manila and Dagupan, Pangasinan.	Manila and Dagupan R. R.	Daily	121.413			88,549		The charter of the Manila and Dagupan R. R. provides that mail shall be carried free between Manila and Dagupan.
402	Jan. 1, 1904	Dao Junction and Camp Stotsenberg, Pampanga.	.....do.....	2 round trips daily.	4.269	365.00	.058	6,205	365.00	
403	July 1, 1904	Bigaa, Bulacan, and Cabanatuan, Nueva Ecija.	.....do.....	Daily	38.190	1,824.45	.116	15,662	1,824.45	July 1, 1904, Bigaa to Baliuag, 10,869 miles; Dec. 24, 1904, extended to San Miguel, 15,835 miles; Apr. 4, 1905, extended to Baliuag, 6,319 miles; May 1, 1905, extended to San Isidro, 5,167 miles; total, 38,190 miles.

SUMMARY.

Railroad service:		Transportation between post-offices—Continued.	
Number of routes.	3	Paid service—Continued.	
Average number of round trips per week.	163.872	Average number of round trips per week.	2.5
Length of routes.	110,418.000	Length of routes.	3,440.2 miles
Traveled during year.	P 2,199.45	Average length of route.	18.5
Amount paid during year.		Miles traveled during year.	482,782.0
(Rate of pay P 85.50 per annum per mile of length. The charter of the Manila and Dagupan Rwy. Co. provides that mail shall be carried free between Manila and Dagupan.)		Cost per annum.	P 57,176.59
Transportation between post-offices and mail trains or boats:		Average rate of cost per mile traveled.	P 1.23
Number of routes.	60	Gratuitous service—	
Amount paid during year.	P 8,814.46	Number of routes.	6
Transportation between post-offices:		Average number of round trips per week.	1.6
Paid service—		Length of routes.	238 miles
Number of routes.	196	Average length of route.	30.6
		Miles traveled during year.	19,964.0
		Total amount paid for inland mail transportation.	P 68,280.50

TABLE F.—Statement of mails dispatched on commercial steamers to foreign ports during the fiscal year ending June 30, 1906, and amount paid for transportation.

First port of call and name of steamer.	Trips.	United States bags.	Foreign letters, net weight.	Foreign prints, net weight.	Amount paid.
<i>From Manila.</i>					
AMOY.					
Sungkiang.....	3		Grams. 13,804	Grams. 8,096	P22.28
Yuensang.....	1		6,440	3,709	10.38
AUSTRALIA.					
Borderer.....	1		5,815	16,367	11.90
Changsha.....	1		7,435	17,502	14.54
Chingtu.....	1		3,080	8,587	6.28
Devonshire.....	1		1,460	990	2.39
Eastern.....	3		15,226	33,339	29.30
Empire.....	1		6,656	9,794	11.68
Gulf of Venice.....	2		8,292	20,287	16.38
Heathford.....	3		11,316	42,800	25.28
Heathford (Sydney).....	1		830	2,000	1.62
Indradeo.....	2		6,444	14,650	12.50
Indrawallo.....	1		200	500	.40
Port Dennison.....	1		1,188	2,840	2.34
Queen Adelaide.....	1		1,506	8,800	3.96
Rigote.....	1		1,791	11,600	4.94
Smuel.....	1		310	3,700	1.18
Taiyuan.....	2		13,127	36,782	26.82
Tainan.....	1		4,814	3,000	7.80
Yawata Maru.....	2		9,475	35,135	21.02
CELEBES.					
Strassfurt.....	1		220	585	.44
HONGKONG.					
Albenga.....	2		8,558	20,274	
Atlantis.....	1		1,333	25,500	6.94
Australian.....	3		18,726	61,850	40.06
Austria.....	1		1,511	5,100	3.24
Changsha.....	4		16,642	66,081	37.75
China.....	1		5,885	20,983	12.90
Chingtu.....	3	12	21,044	54,983	52.24
Coptic.....	1		5,017	14,000	10.24
Doric.....	2	86	67,639	155,691	217.66
Eastern.....	3		25,879	166,913	171.18
Empire.....	3		7,877	33,228	18.26
Gaelic.....	1		5,113	16,800	10.92
Giang-Bee.....	1	10	5,867	14,551	21.62
Hindustan.....	1		4,340	15,600	9.54
Hyades.....	2		9,641	21,241	18.68
Korea.....	2		23,690	50,423	46.30
Legaspi.....	2		5,771	36,287	15.68
Loongsang.....	23	298	426,872	1,155,213	1,162.38
Lyra.....	1		3,007	14,661	7.36
Manchuria.....	2	39	12,894	58,679	69.72
Minnesota.....	1	6	8,602	8,958	20.64
Mongolia.....	2		9,357	20,995	18.06
Nanyang.....	1		3,913	13,747	8.52
Rubel.....	25	679	775,066	1,930,720	2,216.12
Sagami.....	1		3,378	16,535	8.32
Shaohsing.....	1		7,494	19,000	14.92
Slam.....	1		2,563	5,100	4.86
Siberia.....	2		24,332	49,040	46.02
St. Fillians.....	1	7	3,075	4,377	12.46
M. Struve.....	1		14,533	31,127	27.84
Sungkiang.....	3	3	1,681	2,100	5.92
Taiyuan.....	2	16	17,776	43,415	51.06
Taming.....	25	349	602,226	1,671,109	1,576.54
Teau.....	25	281	629,119	2,123,614	1,636.70
Tremont.....	2		11,536	23,634	21.88
Tainan.....	3		35,718	111,970	75.30
Venus.....	1		2,979	54,598	5.32
Yawata Maru.....	2	6	24,727	54,905	53.74
Yuensang.....	23	250	303,704	736,528	848.42
Zafiro.....	26	283	847,696	2,061,709	1,958.36
JAVA.					
Onisberg.....	1		150	450	.30
Wathfield.....	1		20		.04
Kobe.					
Itawea.....	1	19	2,657	6,967	24.34
Tainan.....	1		4,378	5,000	7.64

TABLE F.—Statement of mails dispatched on commercial steamers to foreign ports during the fiscal year ending June 30, 1905, and amount paid for transportation—Continued.

First port of call and name of steamer.	Trips.	United States bags.	Foreign letters, net weight.	Foreign prints, net weight.	Amount paid.
<i>From Manila—Continued.</i>					
LABUAN.					
Chingmai.....	1		Grams. 50		P 0.08
Seledon.....	1		74	430	.20
MOJI.					
Ailsa Craig.....	1		2,955	8,700	6.12
NAGASAKI.					
Gulf of Venice.....	1		7,039	18,601	14.16
SAIGON.					
Atlantis.....	2		120	200	.22
Beatrice.....	1		200		.30
Junco.....	1		90		.14
M. de Batac.....	3		656	785	1.16
Magallanes.....	4		435	800	.80
Mauban.....	4		508	2,900	1.32
Pakhal.....	1		200		.30
SHANGHAI.					
Craydon.....	1		2,280	9,100	5.18
Schleswig.....	1	1			1.00
Shimosa.....	1		840	3,000	1.84
Siam.....	1		1,310	4,600	2.86
St. Hugo.....	1		335	5,800	3.62
SINGAPORE.					
African Prince.....	1		3,863	10,589	7.84
Alicante.....	4		241,996	718,611	502.38
Ansbург.....	1		4,744	207,152	47.30
Atholl.....	2		24,206	94,899	54.72
Calches.....	1		12,926	22,677	23.78
Chiangmai.....	9		252,751	610,280	497.50
Isla de Luzón.....	3		202,780	553,161	411.50
Isla de Panay.....	3		182,400	486,277	367.92
Jessie Burns.....	1		20,667	58,488	42.34
Knight of St. George.....	1		14,219	45,959	29.84
López.....	2		125,708	275,033	241.92
Lowther Castle.....	2		1,979	31,553	8.68
Luckenbuch.....	1		2,858	6,052	5.46
Manor.....	1		11,384	37,389	24.32
Menlaus.....	1		35,549	60,282	65.02
Kennebec.....	1		29,708	48,311	53.94
Montserrat.....	1		82,255	186,647	159.58
Palma.....	1		3,502	5,713	6.36
Sagami.....	1		4,616	41,575	14.98
Satsuma.....	1		10,409	46,651	24.66
Seneca.....	1		14,533	94,774	40.18
Somerfield.....	1		2,381	3,600	4.26
St. Fillians.....	1		29,272	117,645	66.72
Tringgana.....	1		8,587	24,301	17.60
Vulcan.....	1		30,156	114,786	67.50
YOKOHAMA.					
Balzwarda.....	1		4,309	17,200	9.08
Heath Craig.....	1	6	1,602	2,600	8.90
Montrose.....	1		14,714	26,743	27.8
Salindia.....	1	31	7,400	18,645	45.72
Total.....	313	2,384	5,532,002	15,279,497	13,644.55
<i>From Cebu.</i>					
HONGKONG.					
Bourdon.....	1		2,040		3.06
SINGAPORE.					
Pera.....	1		1,965		2.94
Total.....	2		5,005		6.00
<i>From Iloilo.</i>					
HONGKONG.					
Elg.....	1		1,685	1,530	2.82
Gaca.....	1		435		.66

TABLE F.—Statement of mails dispatched on commercial steamers to foreign ports during the fiscal year ending June 30, 1906, and amount paid for transportation—Continued.

First port of call and name of steamer.	Trips.	United States bags.	Foreign letters, net weight.	Foreign prints, net weight.	Amount paid.
<i>From Iloilo—Continued.</i>					
HONGKONG—continued.					
			<i>Grams.</i>	<i>Grams.</i>	
Holstien.....	1		315		P0.48
Kalfong.....	11		10,550	570	15.94
Kwelang.....	1		600	150	.92
Pronto.....	1		195		.30
Slahan.....	1		2,235	1,965	3.74
Sungkiang.....	7		4,080	435	6.20
Venus.....	1		695	1,800	1.38
SINGAPORE.					
Indramayo.....	1		405		.80
Indrani.....	1		465		.70
Indrasamha.....	1		655	675	1.12
Total.....	28		22,315	7,125	34.86
<i>From Jolo.</i>					
SANDAKAN.					
Borneo.....	1		255		.38
Kedah.....	2		850		1.28
Kudat.....	3		3,656	4,422	6.34
Normanhurst.....	1		312		.46
Tringganj.....	4		3,557	950	5.97
Total.....	11		8,630	5,372	14.43
<i>From Zamboanga.</i>					
SANDAKAN.					
Manila.....	1		567	340	.92
Tringganj.....	1		624		.47
Total.....	2		1,191	340	1.39
Grand total.....	356	2,384	5,568,143	15,292,334	13,701.23

TABLE G.—Comparative statement of payments to foreign countries for transportation of Philippine mails since American occupation.

Country.	Year 1899.	Year 1900.	Year 1901 paid fiscal year 1902.	Year 1902 paid fiscal year 1903.	Year 1903 paid fiscal year 1904.	Year 1904 paid fiscal year 1905.
Austria.....	P18.24	P18.26	P17.40	P17.02	P16.56	P16.53
Belgium.....	2,419.04	2,472.64	2,321.30	2,269.70	2,194.24	2,189.93
France.....	8,603.94	8,753.78	7,557.04	7,481.28	6,555.84	6,573.86
Germany.....	32.06	32.08	27.76	27.14	23.44	23.40
Great Britain.....	1,124.82	1,124.82	986.64	964.72	846.46	844.79
Hongkong.....	9,502.52	9,502.50	8,292.96	8,387.96	7,210.11	7,173.36
India.....	4.00	3.98	3.48	3.40	3.00	3.00
Singapore.....	272.12	273.12	228.36	234.54	185.89	185.52
United States.....	109.18	112.02	101.52	100.64	94.22	94.22
Total.....	22,085.92	22,293.20	19,536.46	19,486.40	17,129.76	17,104.61

TABLE H.—Statement of articles received and disposed of in the dead-letter office during the fiscal year ending June 30, 1905.

RECEIVED.

	Registered letters.	Ordinary letters.	Packages.	Total.
On hand undisposed of July 1, 1904:				
Received from United States.....	470	4,921	401	5,792
Received from foreign countries.....	95	1,458	145	1,698
Received from Manila post-office.....	1,197	35,697	793	37,687
Received from other Philippine sources.....	28	2,433	19	480
Returned after attempt to find sender.....		2,445		2,445
Total to be accounted for.....	1,790	44,954	1,358	48,102
Disposed of:				
Returned to United States.....	237	10,565	260	11,062
Returned to foreign countries.....	700	3,267	305	4,332
Request matter, returned to senders in the Philippines.....	441	3,048	73	3,562
Opened and returned to senders.....		19,462	40	19,502
Containing money, drafts, stamps, etc., returned to senders.....		134	2	136
Containing other valuable matters.....	176	73	302	551
Destroyed.....	7	8,332	255	8,594
Filed, containing money, drafts, stamps, etc.....		27		27
Filed, containing other valuables.....	169	46	121	336
On hand June 30, 1905.....				
Total accounted for.....	1,790	44,954	1,358	48,102

CONDITION OF FILES JUNE 30, 1905.

Articles.	On file June 30, 1904.	Filed during year.	Total to be accounted for.	Removed during year.	On file June 30, 1905.	Total accounted for.
Registered letters and packages.....	118	169	287	59	228	287
Letters containing money, drafts, stamps, etc.....	28	27	55	31	24	55
Letters and packages containing other valuables.....	165	167	332	4	328	332
Total.....	311	363	674	94	580	674

Amount of money taken from letters on file more than one year and turned into the postal revenues..... ₱160.73
Amount of postage stamps taken from letters and filed..... 2.04

TABLE I.—Detailed statement of articles received from foreign countries and offices by the dead-letter office, bureau of posts, during the fiscal year ending June 30, 1905.

From—	Registered articles.	Ordinary letters.	Ordinary packages.	Total.
Argentine Republic.....		12		12
Ceylon.....	3	10	2	15
China:				
Hongkong.....		519	79	598
Shanghai.....	46	230	9	285
Cuba.....	5	20		25
Great Britain.....	11	127	7	145
Hawaii.....		44		44
India.....	3	20	4	27
Indo-China.....		1		1
Italy.....	1			1
Japan:				
Kobe.....		16	1	17
Nagasaki.....		81	7	88
Osaka.....		7	1	8
Tokyo.....		1		1
Yokohama.....		32	15	47
Java.....	1	1		2
Korea.....		12		12
Mexico.....	3	23		26
New South Wales.....	2	9		11
New Zealand.....		5		5
Porto Rico.....		4		4
Queensland.....		1		1
Spain.....	20	206	19	245
Straits Settlements.....		77	1	78
Total.....	95	1,458	145	1,698
United States.....	470	4,921	401	5,792
Grand total.....	565	6,379	546	7,490

TABLE J.—Detailed statement of articles returned to foreign countries and offices by the dead-letter office, bureau of posts, during the fiscal year ending June 30, 1905.

To—	Registered articles.	Ordinary letters.	Ordinary packages.	Total.
Aden.....	1			1
Argentine Republic.....	2	8	1	11
Austria.....	11	46	4	61
Barbados (West Indies).....		5	1	6
Belgium.....	2	23		25
Brazil.....		4	1	5
Canada.....	2	60	1	63
Cape Colony.....	1	4		5
Ceylon.....		17		17
Chile.....	1	8	1	9
China:				
Amoy.....	78	1		79
Hongkong.....	46	252	3	301
Peking.....	37	46		83
British post-office, Shanghai.....	2	5		7
German post-office, Shanghai.....		1		1
Imperial Japanese post-office, Shanghai.....	1			1
United States postal agency, Shanghai.....	27	71		98
Cochin China.....	1	8		9
Cuba.....	3	9	2	14
Denmark.....	2	18	1	21
Ecuador.....		1		1
Egypt:				
Alexandria.....	1	9		10
French post-office, Port Said.....		3		3
France.....	39	147		207
Germany.....	15	161	46	222
Gibraltar.....	1			1
Great Britain.....	15	304	47	366
Greece.....	5	11		16
Guatemala.....		1		1
Guam.....	5	18		23
Hawaii.....	1	42		43
India.....	12	78	3	93
Indo-China.....	2	13		15
Italy.....	3	421		424
Jamaica.....	1	1		1
Japan:				
Kobe.....	90	12		102
Nagasaki.....	45	15		60
Tokyo.....	46	321	10	377
Yokohama.....	9	22		31
Java.....	8	13		21
Luxemburg.....		1		1
Labuan.....	1	1		2
Macao.....	2	3		5
Malta.....		6		6
Mexico.....	5	19		24
Natal.....		3		3
Netherlands.....		12		12
New South Wales.....	1	74	6	81
New Zealand.....		14	1	15
Norway.....		27		27
North Borneo.....	10	9		19
Panama.....			1	1
Persia.....		1		1
Peru.....		3		3
Porto Rico.....	1	11		12
Portugal.....	1	6		7
Queensland.....	10	41		51
Roumania.....	1	3		4
Russia.....	6	26		32
Sarawak.....		1		1
Siam.....		6		6
South Australia.....		2		2
Smyrna (Turkey).....	1	1		2
Spain.....	173	650	152	975
Straits Settlements.....	19	56	1	75
Sweden.....		27		27
Syria.....		3		3
Switzerland.....	3	22	1	26
Tasmania.....		9	2	11
Transvaal.....		2		2
Turkey.....	1	12		13
Turkey (German post-office, Constantinople).....	1			1
Uruguay.....		3		3
Venezuela.....		2		2
Victoria (Australia).....		28		28
West Australia.....	10	5		15
Total.....	760	3,267	305	4,332
United States.....	237	10,565	260	11,062
Grand total.....	997	13,832	565	15,394

TABLE K.—Statement of registry business of each post-office for the fiscal year ending June 30, 1905.

Province and office.	Registered, fee paid.		Official, free.		In transit.	Received for delivery.	
	Letters.	Parcels.	Letters.	Parcels.		Letters.	Parcels.
ALBAY.							
Albay.....	124	14	250	190	566	204	180
Bacacay.....	12		3		62	39	
Camalig.....	79	3	7	1	737	94	22
Daraga.....	123	11	9	3	882	100	20
Guinobatan.....	320	54	51	30	114	274	106
Jovellar.....	29	2			4	27	3
Legaspi.....	1,561	357	534	339	2,585	1,150	885
Libog.....	69	6	6		107	41	17
Libon.....	3		1			4	
Ligao.....	488	72	50	36	206	199	77
Mallipot.....	2				10	2	
Malinao.....	1					5	
Manito.....	14		1			7	2
Oás.....	6	5				7	2
Pandan.....	4				3	18	1
Polangui.....	99	4	6	3	73	77	18
Rapu Rapu.....							
Tabaco.....	432	33	109	16	22	348	179
Tivi.....	2					6	1
Virac.....	229	18	46	22	21	174	66
AMBOS CAMARINES.							
Calabanga.....	11		6	1		19	5
Capalonga.....	9	1	2			12	8
Daet.....	448	89	44	11	212	304	120
Indan.....	36	2	2		138	47	6
Iriga.....	120	9	34	23		121	56
Labo.....	12	5		2		28	14
Libmanan.....	25	8	7	2	120	63	10
Lupit.....	22		1		28	3	7
Magarao.....	1		5		39	12	3
Mambulao.....	13		5	1	34	22	3
Nabua.....	2	1				2	1
Nueva Cáceres.....	648	188	296	260	538	729	863
Pamplona.....			1		1		
Paracale.....	32		3		58	35	11
Pasacao.....	29	2	56	16	31	46	15
Ragay.....	42	3	4	1	1	40	9
San José.....	65	16	3	4	19	90	69
San Vicente.....	22	8	1	1	43	13	8
Sipocot.....	18	1	7		54	25	7
Tigaon.....	16		4		120	53	2
ANTIQUE.							
San José.....	147	20	207	96	1	238	324
BÁTAN.							
Abucay.....	9		2		83	34	13
Balanga.....	201	53	333	79	35	370	102
Dinalupijan.....	27		39	2	1	60	19
Mariveles.....	120	32	43	18		367	47
Orani.....	50	21	13	7	149	86	20
Orión.....	43	4	5	4		62	34
BATANGAS.							
Balayán.....	44	12	10	13	129	90	64
Batangas.....	1,055	357	839	559	853	912	1,029
Batnan.....	22	1	7	4	969	63	29
Calaca.....	16	6	5	10	348	36	67
Cuenca.....	2		2		1	27	15
Ibaan.....	7	1	2	2	162	106	83
Lipa.....	159	29	49	34	179	159	135
Lobooc.....	10		4			24	17
Nasugbu.....	93	4	8	2	5	64	43
Rosario.....	14		1	9	94	34	21
San José.....						20	20
San Juan de Booboc.....	8	6	1	8		52	28
Santo Tomás.....	97	22	45	55	627	90	63
Taal.....	165	51	20	5	418	186	49
Tanauan.....	57	6	28	20	445	124	61
BENGUET.							
Baguio.....	466	355	416	59		644	750
Twin Peaks.....	1,079	60	225	60	1,161	1,116	508

TABLE K.—Statement of registry business of each post-office for the fiscal year ending June 30, 1905—Continued.

Province and office.	Registered, fee paid.		Official, free.		In transit.	Received for delivery.	
	Letters.	Parcels.	Letters.	Parcels.		Letters.	Parcels.
BOHOL.							
Calape.....	3			2	44	21	9
Dausa.....					1	11	5
Jagna.....	6		4	1		6	5
Laoay.....	28	1	3	1	32	38	22
Loboc.....	5					6	
Maribojoc.....	25	5	3	4	61	31	13
Tagbilaran.....	140	65	232	80	168	165	483
Tubigon.....	19	4	7	2		62	12
Valencia.....				2		2	12
BULACÁN.							
Angat.....	33	1	9	4		175	37
Balluag.....	215	127	44	19	236	274	175
Bocaue.....	19	7	3	8	97	74	63
Bulacán.....	71	15	46	13		171	66
Calumpit.....	99	12	12	17	948	108	68
Hagonoy.....	28	4	3	1		134	33
Malolos.....	206	71	452	552	91	562	609
Meycauayan.....	47	9	9	5		90	54
Paombong.....	8	3	5	6	40	18	40
Polo.....	12	1	1	16		59	80
Quinigua.....	51	1	4	1	2	89	47
San Miguel.....	41	7	84	9		138	61
Santa Maria.....	14		2	1		40	42
CAGAYÁN.							
Abulug.....	94	2	6	10	123	66	34
Alcalá.....	46	6	29	31	192	75	37
Amulung.....	25	18	13	13		16	13
Aparri.....	736	29	212	193	3,456	430	217
Baggao.....	5					4	6
Camalanigan.....	7	1	1	5		22	11
Claveria.....	18	3	2	5		9	11
Enrile.....	17					11	13
Gattaran.....	6	1	4		1	11	11
Iguig.....	33	2	6		2	24	9
Lal-lo.....	44	1	21	14		51	18
Mauanan.....							5
Pamplona.....	15	1	6		87	40	10
Peña Blanca.....				2		3	4
Piat.....	11		2	1	38	33	16
Sánchez Mira.....	19		8		45	20	13
Santo Niño.....	6				4	5	5
Solana.....	3		3		17	18	
Tuao.....	8	1	1			11	9
Tuguegarao.....	537	95	385	304	1,104	607	677
CÁPIZ.							
Calivo.....	22	9	5	13		128	15
Cápiz.....	650	83	350	182	85	501	414
New Washington.....	6		1		83	8	4
CAVITE.							
Alfonso.....	19	4	7	3		46	15
Bacoor.....	47	1	17	3	643	77	10
Carmona.....						3	
Cavite.....	3,497	1,578	482	252	1,374	2,130	1,585
Corregidor.....	159	84	88	41	5	107	145
Imus.....	164	39	5	8	222	137	98
Indang.....	106	10	15	5	97	85	42
Maragondón.....	28	2	8	7		57	40
Naic.....	238	37	70	35	425	128	39
Noveleta.....	30	7	5			33	15
San Francisco.....	176	24	45	21	47	107	66
Santa Cruz.....	36	8	7	3	275	39	27
Silang.....	80	2	31	9	42	88	25
CEBÚ.							
Aloguinaan.....	6		4		362	12	8
Argao.....	83	5	96	33	196	77	43
Balamban.....	25		5		120	36	32
Bantayan.....	16	5	15	3		40	25
Barile.....	31	3	3	7	659	74	28
Bago.....	63	1	15	7	2	67	34

TABLE K.—Statement of registry business of each post-office for the fiscal year ending June 30, 1905—Continued.

Province and office:	Registered, fee paid.		Official, free.		In transit.	Received for delivery.	
	Letters.	Parcels.	Letters.	Parcels.		Letters.	Parcels.
CEBU—continued.							
Carcar.....	27	1	12	2	714	64	31
Carmen.....			6	2	392	21	3
Catmon.....	2		13		251	21	13
Cebu.....	3,941	533	953	777	5,294	3,327	2,123
Dalaguete.....	36	7	21	5	110	35	33
Danao.....	36	1	17	2	407	56	19
Dumanjug.....	65	2	37	2	152	78	21
Ginatlan.....	1				12	25	19
Liloan.....	36	9	7		533	29	17
Malabuyoc.....			2	2	1	15	20
Mandaue.....	12				644	13	17
Minglanilla.....	7			1	874	9	8
Moalbual.....	20	1	7		75	35	26
Naga.....	56	4	7		564	45	15
Opon.....	1					15	7
Oslob.....	21	4	44	23		44	26
Pinamungajan.....	8		1	1	281	11	15
San Fernando.....	14		1	1	696	18	12
San Remigio.....	1		4	1	34	20	32
Sibonga.....	20	1	8	2	119	47	18
Tabogon.....	10		6	2	302	77	14
Talisay.....	30	1	3	2	888	21	18
Toledo.....	174	1	3		214	25	18
Tuburan.....	30		14			42	9
ILOCOS NORTE.							
Bacarra.....	36	1	36	2	119	73	21
Badoc.....	48		17		5	54	25
Banguil.....							
Batac.....	34	1	9	1	171	82	21
Dingras.....	32	17	2			51	38
Laoag.....	653	145	341	206	516	598	664
Paoay.....	14		5			42	15
Pasauquin.....	18		3	1	1	26	21
Piddig.....	1				121	17	11
San Miguel.....	13	1	4		169	26	10
ILOCOS SUR.							
Bangued.....	217	46	214	48		214	197
Candon.....	107	8	33	43	221	140	33
Lapo.....	9				2	17	12
Magsingal.....	22	1	2		31	25	1
Narvacan.....	44	3		1	89	45	7
Salomague.....	189	13	41	9	702	102	52
San Esteban.....	27		6	1	1,262	32	6
Santa.....	8		14	9	89	111	24
Santa Cruz.....	20		3		272	24	8
Santa Lucia.....	38				279	18	1
Santa Maria.....	58	12	4	3	19	31	33
Sinalit.....	11	6	4		32	22	
Tagudin.....	33		8	1	250	31	14
Vigan.....	1,041	217	456	215	1,990	811	671
ILOILO.							
Camp Joasman.....	399	129	173	62		282	299
Iloilo.....	4,513	923	710	507	4,222	4,498	3,012
ISABELA.							
Angadanan.....	4		7	1	43	2	
Cabangan Nuevo.....	45	1	18	14	30	73	11
Cabangan Viejo.....	1		2		2	6	2
Canayan.....	14	2	6	8	364	26	10
Echagüe.....	165	10	45	33	1	101	64
Gamu.....	1		1		248	13	6
Iligan.....	311	35	226	92	430	261	268
Naguilian.....	19		4		228	28	3
Santa Maria.....	1		4	2	1	5	1
Santo Tomás.....			3	1	4		1
Tumauini.....	29		7	6		40	21
LA LAGUNA.							
Bay.....	101	19	41	4	670	86	50
Bigan.....	170	12	63	21	12	127	113
Cabuyao.....	13			3	1	26	47

TABLE K.—Statement of registry business of each post-office for the fiscal year ending June 30, 1906—Continued

Province and office.	Registered, fee paid.		Official, free.		In transit.	Received for delivery.	
	Letters.	Parcels.	Letters.	Parcels.		Letters.	Parcels.
LA LAGUNA—continued.							
Calamba.....	209	66	84	107	845	152	219
Calauan.....	152	1	13		416	56	38
Lilio.....	2					14	6
Los Baños.....	232	94	124	28	24	312	300
Luisiana.....	2		1	3		11	15
Lumban.....						3	5
Mabitac.....						2	6
Magdalena.....	25		15	2	800	19	31
Mayjayay.....	42		10		576	58	22
Malani Island.....	463	110	47	31		188	252
Nagcarlan.....	53	1	10	3	19	72	48
Paete.....	30	4	7	5	193	73	50
Pagsanjan.....	161	51	17	30	36	164	198
Pangil.....	11		2	6	135	43	29
Pila.....	11		2			13	20
San Pablo.....	128	14	92	21	106	328	103
San Pedro Tunasán.....	34	3	1	1		42	23
Santa Cruz.....	312	86	850	917	2,765	581	740
Santa Rosa.....	93	3	8	1		101	34
Sinloan.....	12	2	7	1	13	43	32
LA UNIÓN.							
Agoo.....	18		17	1	143	75	10
Aringay.....	62		2	1	239	96	22
Bacnotan.....	45		1		682	75	24
Balaocan.....	44		3	1	9	60	7
Bangar.....	32		25	1	253	100	6
Bauang.....	46	3	4	1	604	49	19
Naguilian.....	41	12	11	16	16	81	23
Namacpacan.....	100	3	6		487	100	10
San Fernando.....	965	218	628	296	1,133	921	707
San Juan.....	28				795	47	8
Santo Tomás.....	28		10	1		68	9
Tubao.....	7		2			16	5
LEPANTO-BONTOC.							
Alliem.....	7	8				8	10
Bontoc.....	116	31	8	7		25	96
Cervantes.....	132	38	120	52	255	168	242
Sagada.....	15	13	6		181	11	33
LEYTE.							
Barugo.....	36		3	2		16	20
Baybay.....	41	3	39	27		34	19
Carigara.....	126	13	90	64	25	152	18
Maasin.....	63	6	73	24		94	18
Ormoc.....	463	65	146	43	244	296	153
Palo.....	40	15	2	2		46	49
Tacloban.....	1,227	143	587	226	1,401	1,006	793
MANILA.....	48,460	16,227	23,272	15,664	7,927	82,157	45,575
MASBATE.							
Aroroy.....	36		3			51	7
Catalingan.....	4		3	1		16	4
Mandaon.....	8		1	2		3	3
Masbate.....	224	70	241	338	222	298	259
Milagros.....	9		7		38	29	2
Pulanduta.....	9		1			10	
San Fernando.....	2			3	18	18	6
San Jacinto.....	22	2	2			28	3
Uson.....	12	1	6	1	26	48	
MINDORO.							
Calapan.....	303	18	236	73		318	271
Lubang.....			3			16	5
MISAMIS.							
Mambajao.....	51	1	7	3		56	16
Cagayán.....	283	59	141	79	10	282	288
Misamis.....	50	5	56	41		51	26
Oroquieta.....	117	2	18	8	2	81	20

TABLE K.—Statement of registry business of each post-office for the fiscal year ending June 30, 1905—Continued.

Province and office.	Registered, fee paid.		Official, free.		In transit.	Received for delivery.	
	Letters.	Parcels.	Letters.	Parcels.		Letters.	Parcels.
MORO.							
Bongao.....	684	121	218	146	74	510	354
Baganga.....	1	2	3			8	7
Camp Marahul.....	945	571	164	27	105	358	537
Camp Overton.....	547	218	169	90	2,085	370	417
Camp Vicars.....	193	31	15	2	45	52	64
Cotabato.....	18	11	18	5	1	29	28
Dapitan.....	33	7	10		4	26	18
Davao.....	256	28	66	13	3	274	207
Iligan.....	258	52	180	106	30	281	184
Jolo.....	1,132	206	365	109	62	742	643
Malabang.....	985	239	168	107	306	456	558
Matl.....	14				6	9	4
Parang Parang.....	392	72	64	56	9	280	147
Siasi.....	14		52	20	2	39	6
Zamboanga.....	1,845	365	1,024	752	980	1,856	1,601
NEGROS OCCIDENTAL.							
Bacolod.....	578	74	707	141	92	625	618
Bago.....	27	6	3		101	44	25
Binalbagan.....	1				48	1	
Cadiz.....	16		4		39	15	3
Cauayan.....	1						
Escalante.....	96	7	38	33	2	69	20
Ilog.....	4				2	30	1
Isabela.....	35	1	1			30	18
Jimamallan.....		1			1	1	1
Jinigaran.....	35	2	3		142	23	6
La Carlota.....	37	1	22	2		121	53
Manapla.....	3		3		94	16	
Murcia.....			1			12	
Pontevedra.....	58	15	3	1	196	38	43
Sagay.....	1				53	1	
San Carlos.....	182	10	70	86	3	128	22
Saravia.....	1	3			99	5	4
Silay.....	53	6	13		243	77	27
Talisay.....	47	2	7		75	54	18
Valladolid.....	30		8		293	56	15
Victorias.....	20				128	29	4
NEGROS ORIENTAL.							
Ayuquitan.....					74		2
Bacon.....	11	2		2	52	13	4
Bals.....	37	4	56	63	16	94	17
Dauln.....	11			1	27	10	6
Dumaguete.....	358	93	424	110	147	439	426
Larena.....	5		1	1		8	
Luzuriga.....	4		2	1		1	3
Siquiljor.....					12	8	
Tanjay.....	16	3		1	60	13	3
Tolong.....	15	10				5	4
NUEVA ÉCIJA.							
Allaga.....	58		12	8	148	118	36
Cabanatúan.....	82	2	44	24	453	179	33
Cuyapo.....	156	7	15	8	4	88	59
Gapán.....	19		6	2	31	129	12
Licab.....	27		2	3		34	27
Peñaranda.....	17		9	2		51	16
San Antonio.....	17	1	3	1		48	11
San Isidro.....	312	52	335	291	668	585	449
San José.....	43	1	4	1	9	34	19
San Juan de Gulmba.....	12	3	1	1		31	24
Talavera.....	23		5	5	95	36	25
Bongabon.....	8		6			39	14
NUEVA VIZCAYA.							
Bagabag.....	11	1	2			17	13
Bambang.....	4	4	2		10	4	5
Bayombong.....	161	49	128	68	76	131	232
Dupax.....	8	1			19	11	16
Solana.....	17	7	2		48	12	1

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Province and office.	Registered, fee paid.		Official, free.		In transit.	Received for delivery.	
	Letters.	Parcels.	Letters.	Parcels.		Letters.	Parcels.
PAMPANGA.							
Apalit.....	29	4	2	5		122	47
Angeles.....	158	10	177	57	329	397	61
Arayat.....	85	2	22	8		174	49
Bacolor.....	103	12	90	57	478	250	383
Camp Stotsenberg	509	337	129	34		289	673
Candaba.....	54	7	7	2		62	89
Florida Blanca	23		7	5		63	16
Guagua.....	59	5	20	8		161	48
Lubao.....	11	3	13	7	143	96	24
Macabacat.....	32		43			178	23
Macabebe.....	112		9	5	6	442	26
Magalan.....	34	1	3	6		70	25
Mexico.....	53	5	3	3	24	92	48
Porac.....	20	6	1		84	69	19
San Fernando.....	379	93	904	491	853	687	686
San Luis.....	42	1	2			98	38
Santa Rita.....			1			31	17
Santo Tomás.....	16					12	6
PANGASINÁN.							
Agno.....	23		9		224	37	2
Alaminos.....	79	10	42	40	420	57	58
Alcala.....	36	1	10		308	65	6
Anda.....	5		5			7	4
Asingan.....	77	28	4			82	29
Bani.....	8			4	183	22	
Bautista.....	468	3	33	1	1,729	238	26
Binalonan.....	209	6	3		424	75	16
Binmaley.....	14		3			23	11
Bollnau.....	55	4	29	24	3	42	25
Calasiao.....	54	8	2	4		65	28
Bayambang.....	465	72	174	23	234	226	196
Dayupan.....	1,049	126	417	190	4,713	831	321
Infanta.....	9		5		24	21	
Lingayén.....	465	173	598	306	722	755	1,085
Malasiqui.....	46	4	4			39	
Manaoag.....	64	9	9	1	691	70	25
Mangaldan.....	31	5	2	2	1,146	30	12
Mangatarem.....	27		4			48	18
Pozorrubio.....	69		3		506	63	16
Rosales.....	98	5	8		85	139	16
Salasa.....	22	2	12	5	93	46	16
San Carlos.....	43	12				116	16
San Fabián.....	114		16	5		140	16
San Isidro.....	32	3	2		338	27	9
San Nicolás.....	24		4		44	27	8
San Quintín.....	8	2	5		348	24	15
Sual.....	15		3		583	39	7
Tayug.....	130	21	5	9	83	111	74
Umingan.....	29	1	7	2	474	47	9
Urdaneta.....	49	6	3	4		68	35
Villasis.....	29	1				43	13
PALAWAN.							
Coron.....	44	10	6	3	1	28	13
Cullón.....	22	2	29	3	18	12	35
Cuyo.....	95	23	111	24	8	103	152
Puerto Princessa.....	92	30	43	7	1	121	92
RIZAL.							
Caloocan.....	35	12	13	10	208	64	39
Malabón.....	82	43	12	1		368	30
Mariquina.....	54	45	19	2	74	56	40
Morong.....	18	1				6	15
Parañaque.....	4	1	3	2	2	37	7
Passay.....	5	2	3	2	70	65	17
Paig.....	160	42	251	153	191	532	368
Pateros.....	59	1	10			38	10
Pillilla.....	6	1				6	4
San Felipe Neri.....	5		111			122	

TABLE K.—Statement of registry business of each post-office for the fiscal year ending June 30, 1906—Continued.

Province and office.	Registered, fee paid.		Official, free.		In transit.	Received for delivery.	
	Letters.	Parcels.	Letters.	Parcels.		Letters.	Parcels.
ROMBLÓN.							
Romblón.....	164	30	302	77	8	148	248
SÁMAR.							
Allen.....	13		9		8	17	4
Balangiga.....	20		3			16	1
Basey.....			1	2	3	3	5
Borongan.....	186	23	33	11	59	126	53
Calbayog.....	1,172	185	336	131	441	505	469
Catarman.....	23		6			41	8
Catbalogan.....	607	54	513	167	79	509	686
Gándara.....	6					33	16
Guluan.....			1			4	
Lao-ang.....	158	13	8	2	15	131	85
Orás.....	213	5	5	1	7	80	42
Taft.....	82	1	22	1	27	44	29
Villa Real.....	5	2				7	6
SORSOGÓN.							
Bacon.....	35	5	8	5	158	59	18
Barcelona.....	21	1	2	5	15	30	9
Bulan.....	82	9	11	3	45	98	43
Bulusan.....	26		1			18	13
Casiguran.....	91	2	6		414	50	26
Castilla.....							
Donsol.....	88	1	2		3	101	33
Gubat.....	117	3	3		97	103	39
Irosin.....	194	11	3		153	40	17
Juban.....	38	2	2		338	39	14
Magallanes.....	10				4	25	
Matnog.....	61	2	2			33	
Pilar.....	156	37	10	1	65	120	44
Prieto Diaz.....	6					6	
Sorsogón.....	846	105	577	259	968	731	501
SURIGAO.							
Butuan.....	12		6			8	23
Surigao.....	166	37	240	102	89	284	321
TÁRLAC.							
Bamban.....	20		3			12	13
Camiling.....	81	14	11	3	2	100	33
Capas.....	107	9	17	1	112	60	94
Concepción.....	14	4	15	3		133	16
Moncada.....	65	5	24	5	307	90	27
Paniqui.....	44	4	10	1		74	16
Pura.....	30		5	2	11	41	31
Tárlac.....	568	130	331	334	74	598	487
Victoria.....	33		1			56	10
TAYABAS.							
Atimonan.....	369	42	60	44	360	179	115
Baler.....	10	8	4	1		22	15
Boac.....	96	29	140	73	89	237	112
Calauag.....	91	10	6	3		64	38
Catanauan.....	17		1	1	123	26	16
Guinayangan.....	97	9	16	24		45	36
Gumaca.....	3					41	9
Infanta.....	24		15			15	8
Lagulmanoc.....					34	1	2
López.....	95	5	17	43	181	42	41
Lucbán.....	111	35	6	5	364	90	77
Lucena.....	753	303	725	633	1,216	822	1,006
Mauban.....	72	1	8	1	4	114	35
Mogpog.....					1	1	
Mulanay.....	28	3	7	3	3	79	20
Pagbilao.....	68		48	1	572	91	
Pitogo.....	33	1	8		169	56	11
Sampaloc.....					32		
Santa Cruz.....	29	7	6	3	6	68	37
Sariaya.....	74	3	61	13	45	50	30
Tayabas.....	109	4	90	16	130	141	63
Tiaong.....	15		15	7		36	22
Torrijos.....					2	1	

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TABLE K.—Statement of registry business of each post-office for the fiscal year ending June 30, 1906—Continued.

Province and office.	Registered, fee paid.		Official, free.		In transit.	Received for delivery.	
	Letters.	Parcels.	Letters.	Parcels.		Letters.	Parcels.
ZAMBALES.							
Botolan.....	8	.....	2	1	172	28	5
Iba.....	97	10	234	124	86	248	258
Masinloc.....	19	.....	10	14	81	47	19
Olongapo.....	570	342	427	57	4	402	404
San Marcelino.....	50	3	6	1	214	46	21
San Narciso.....	16	4	19	4	191	71	20
Santa Cruz.....	10	.....	10	6	15	21	3
Subic.....	132	1	32	4	498	93	50
Grand total.....	110,526	29,006	49,985	30,250	100,872	144,050	89,706

TABLE L.—Registered letters and parcels received from and dispatched to United States, foreign countries, and Philippine post-offices during the fiscal year ending June 30, 1906.

MANILA.

	United States.	Foreign countries.	Philippines.	Total.
RECEIVED.				
Registered letters for delivery.....	4,711	20,392	57,054	82,157
Registered parcels for delivery.....	11,890	23,310	10,385	45,575
Registered letters in transit.....	3,853	5,045	19,491	28,389
Registered parcels in transit.....	8,932	3,311	8,217	20,460
Total.....	29,376	52,058	95,147	176,581
DISPATCHED.				
Registered letters.....	12,797	22,641	13,022	48,460
Registered parcels.....	6,518	5,045	4,664	16,227
Letters in transit.....	12,998	7,229	8,567	28,794
Parcels in transit.....	7,835	555	12,502	20,892
Official letters registered free.....	497	839	21,936	23,272
Official parcels registered free.....	87	34	15,543	15,664
Total.....	40,732	36,343	76,234	153,309
Sacks registered mail received.....	1,803	2,041	3,594	7,438
Sacks registered mail dispatched.....	1,642	1,821	6,334	9,797
Total.....	3,445	3,862	9,928	17,235

CEBÚ.

RECEIVED.				
Registered letters for delivery.....	.....	24	3,303	3,327
Registered parcels for delivery.....	.....	2	2,121	2,123
Registered letters in transit.....	.....	.....	42	42
Registered parcels in transit.....	.....	.....	15	15
Total.....	.....	26	5,481	5,507
DISPATCHED.				
Registered letters.....	.....	9	3,932	3,941
Registered parcels.....	.....	.....	533	533
Letters in transit.....	.....	.....	46	46
Parcels in transit.....	.....	.....	21	21
Official letters registered free.....	.....	.....	953	953
Official parcels registered free.....	.....	.....	777	777
Total.....	.....	9	6,262	6,271
Sacks registered mail received.....	.....	7	570	577
Sacks registered mail dispatched.....	.....	2	214	216
Total.....	.....	9	784	793

TABLE L.—Registered letters and parcels received from and dispatched to United States, foreign countries, and Philippine post-offices, etc.—Continued.

ILOILO.

	United States.	Foreign countries.	Philippines.	Total.
RECEIVED.				
Registered letters for delivery.....		28	4,470	4,498
Registered parcels for delivery.....		2	3,010	3,012
Registered letters in transit.....		4	212	216
Registered parcels in transit.....			92	92
Total.....		34	7,784	7,818
DISPATCHED.				
Registered letters.....			4,513	4,513
Registered parcels.....			923	923
Letters in transit.....			264	264
Parcels in transit.....			103	103
Official letters registered free.....			710	710
Official parcels registered free.....			507	507
Total.....			7,020	7,020
Sacks registered mail received.....		2	570	572
Sacks registered mail dispatched.....			241	241
Total.....		2	811	813

JOLÓ.

RECEIVED.				
Registered letters for delivery.....		35	707	742
Registered parcels for delivery.....			643	643
Registered letters in transit.....		11	1	12
Registered parcels in transit.....				
Total.....		46	1,351	1,397
DISPATCHED.				
Registered letters.....		22	1,110	1,132
Registered parcels.....			206	206
Letters in transit.....			17	17
Parcels in transit.....			1	1
Official letters registered free.....		1	364	365
Official parcels registered free.....			109	109
Total.....		23	1,807	1,830
Sacks registered mail received.....		15	120	135
Sacks registered mail dispatched.....		11	85	96
Total.....		26	205	231

ZAMBOANGA.

RECEIVED.				
Registered letters for delivery.....		91	1,765	1,856
Registered parcels for delivery.....			1,601	1,601
Registered letters in transit.....		4	13	17
Registered parcels in transit.....			61	61
Total.....		95	3,440	3,535
DISPATCHED.				
Registered letters.....		4	1,841	1,845
Registered parcels.....			395	395
Letters in transit.....			37	37
Parcels in transit.....			65	65
Official letters registered free.....			1,024	1,024
Official parcels registered free.....			752	752
Total.....		4	4,114	4,118
Sacks registered mail received.....		3	263	266
Sacks registered mail dispatched.....		2	152	154
Total.....		5	415	420

TABLE M.—*Mails received from and dispatched to Philippine offices by the Manila post-office during the fiscal year ending June 30, 1906.*

Month.	Cavite and Manila and Dagupan R. P. O.			Other Philippine offices.		
	Mails.	Pouches.	Sacks.	Mails.	Pouches.	Sacks.
1904.						
July.....	114	119	163	340	731	323
August.....	117	124	164	347	798	333
September.....	114	126	164	362	992	304
October.....	116	140	178	391	879	296
November.....	116	125	172	386	848	300
December.....	118	124	192	399	894	306
1905.						
January.....	117	133	186	431	936	304
February.....	108	113	144	391	861	251
March.....	124	143	364	456	933	167
April.....	113	116	188	381	842	282
May.....	120	126	191	473	1,026	322
June.....	124	125	229	394	904	383
Total.....	1,401	1,514	2,355	4,751	10,644	3,571

DISPATCHED.						
1904.						
July.....	120	152	334	464	843	1,287
August.....	124	154	440	507	907	1,403
September.....	119	147	478	530	909	1,357
October.....	116	140	178	542	928	1,682
November.....	116	140	331	543	909	1,444
December.....	120	169	619	576	1,033	1,546
1905.						
January.....	117	166	475	475	1,135	1,320
February.....	112	154	390	592	994	1,340
March.....	120	153	376	666	1,130	1,695
April.....	117	152	407	619	1,040	1,274
May.....	122	168	495	658	1,270	1,717
June.....	117	170	661	606	1,082	1,949
Total.....	1,420	1,765	5,244	6,778	12,080	17,914

TABLE N.—*Mails received from and dispatched to the United States on transports and liners, via Hongkong and Japan ports, by the Manila post-office during the fiscal year ending June 30, 1906.*

Month.	By—	Received.				Dispatched.			
		No.	Pouches of letters.	Pouches of registered letters.	Sacks of papers.	No.	Pouches of letters.	Pouches of registered letters.	Sacks of papers.
1904.									
July.....	Transport.....					2	28	40	53
Do.....	Liner.....	5	38	44	355	9	70	70	123
August.....	Transport.....	1	33	111	721	1	28	45	56
Do.....	Liner.....	5	56	48	448	2	23	19	45
September.....	Transport.....	1	29	57	516	1	39	48	55
Do.....	Liner.....	6	61	59	554	5	44	40	76
October.....	Transport.....	2	55	122	875	1	2	10	6
Do.....	Liner.....	7	53	66	593	7	64	72	112
November.....	Transport.....	1	20	86	549	1	16	62	30
Do.....	Liner.....	6	71	99	661	9	69	152	127
December.....	Transport.....	1	25	109	691	1	7	24	12
Do.....	Liner.....	5	37	118	647	5	48	72	69
1905.									
January.....	Transport.....	1	17	41	355	1	22	68	85
Do.....	Liner.....	5	39	98	794	6	59	17	30
February.....	Transport.....	1	27	85	626	2	33	36	53
Do.....	Liner.....	4	19	37	305	4	38	44	85
March.....	Transport.....	2	24	78	557	2	17	17	26
Do.....	Liner.....	7	35	33	719	9	59	52	102
April.....	Transport.....					1	4	4	4
Do.....	Liner.....	7	38	76	755	4	50	60	101
May.....	Transport.....	2	23	70	487	1	39	33	64
Do.....	Liner.....	6	38	94	656	5	36	31	44
June.....	Transport.....	4	59	273	1,368	2	36	26	60
Do.....	Liner.....	6	16	38	216	3	54	50	99
Total.....		86	813	1,842	13,448	84	885	1,092	1,517

TABLE O.—*Mails received from and dispatched to Honolulu, Guam, and United States ships and troops in foreign ports by the Manila post-office during the fiscal year ending June 30, 1905.*

Month.	Honolulu.				Guam.				Ships and troops.	
	Received.		Dispatched.		Received.		Dispatched.		Re- ceived.	Dis- patch- ed.
	Mails.	Bags.	Mails.	Bags.	Mails.	Bags.	Mails.	Bags.	Bags.	Bags.
1904.										
July.....	2	2	2	2	1	2	1	1	15	85
August.....	4	8	1	2	1	1			31	61
September.....	3	7	1	2	1	5			13	87
October.....	5	13	4	5	2	16	1	1	11	73
November.....	5	9	4	5	1	3			39	48
December.....	4	9	3	2	1	3	3	3	19	64
1905.										
January.....	4	6	3	4	2	5			20	40
February.....	3	6	2	2	1	1	1	2	45	38
March.....	5	7	2	2	1	3			31	57
April.....	3	8	2	3					36	39
May.....	4	8	1	1	1	10	1	1	30	66
June.....	7	16	4	4	5	17	2	3	49	38
Total.....	49	99	29	34	17	66	9	11	339	696
Cav te.....			2	2			3	3	4	23
Grand total..	49	99	31	36	17	66	12	14	343	719

TABLE P.—*Mails received from and dispatched to foreign countries during the fiscal year ending June 30, 1905.*

Quarter ending—	Received.		Dispatched.			
	Mails.	Bags.	Mails.	Bags.	Net weight of letters.	Net weight of prints.
MANILA:					Grams.	Grams.
Sept. 30, 1904.....	84	998	73	540	1,455,186	4,312,876
Dec. 31, 1904.....	88	1,030	83	535	1,643,292	4,190,264
Mar. 31, 1905.....	86	1,146	84	616	1,449,387	3,672,948
June 30, 1905.....	96	1,191	92	664	1,322,478	3,595,655
Total.....	354	4,365	332	2,355	5,870,343	15,771,743
Cebu.....	28	28	2	2	5,005	
Iloilo.....	40	40	28	28	22,315	7,125
Jolo.....	17	17	18	18	8,630	5,372
Zamboanga.....	6	6	2	2	1,191	340
Grand total.....	445	4,456	382	2,405	5,907,484	15,784,580

APPENDIX D.

THIRD ANNUAL REPORT OF THE CHIEF OF COAST GUARD AND TRANSPORTATION.

MANILA, P. I., August 30, 1905.

SIR: I have the honor to submit the following report of the work of the bureau of coast guard and transportation for the fiscal year ended June 30, 1905:

The general organization of the bureau has remained unchanged.

Capt. Spencer Cosby, Engineer Corps U. S. Army, light-house engineer, continued in charge of the division of light-house construction; Mr. Alexander Franklyn, light-house inspector of the division of light-house maintenance; Mr. Frank P. Helm, marine superintendent of the division of vessels; and Mr. D. J. Curran, inspector of machinery of the machinery and shops of the division of vessels.

The principal items of government property in charge of these officers, respectively, are—

(1) The light-houses under construction; the building material entering into their composition; the apparatus for their operation; a 25-ton sloop named the *Jervey* used in carrying fresh water and various supplies to isolated construction parties; storehouse on Engineer Island, etc.; (2) the completed light-houses and lesser lights, buoys, beacons, and daymarks; the three light-house tenders *Corregidor*, *Romblon*, and *Picket*; storehouse and buoy shed on Engineer Island, etc.; (3) the cutters, seagoing launches, and river and harbor launches—29 in all; their coal and other supplies; storehouse on Engineer Island, etc.; and (4) marine railway with 1,400-ton dockage capacity, and the foundry and main machine shop and their contents.

OFFICE FORCE AND OFFICE LOCATION.

In the entire bureau there is a force of 32 clerks, storekeepers, assistant storekeepers, messengers, etc. Of these employees 17 are natives of the Philippine Islands.

In January, 1905, the office force moved from the old captain of the port's building to the new quarters on Engineer Island.

BUILDING-UP OF ENGINEER ISLAND.

Throughout the year we have obtained from the improvement of the port works mud and sand dredged from Manila's esteros and have worked 100 to 150 prisoners from Bilibid prison discharging same on Engineer Island. Filling the island to height of original retaining walls is nearing completion.

WATER SUPPLY ON ENGINEER ISLAND.

An artesian well has been sunk on Engineer Island to a depth of 588 feet and sufficient good water is obtained therefrom for ordinary use of the bureau. Brackish water was found at a depth of 250 feet.

A salt-water well has been sunk and is connected by 12-inch main to the sea.

Water pipes have been laid about the island, and hydrants and hose racks suitably placed for fire protection.

COALING ARRANGEMENTS THROUGHOUT ISLANDS.

Australian coal is now obtained from the insular purchasing agent at slightly lower prices than either Australian or Japanese coal heretofore, and the cost at outlying stations has been somewhat equalized. Nevertheless coal is expensive. The lowest price paid for it is ₱11.70 per ton at Manila. At the majority of coaling ports the price is about ₱15 per ton.

Attempts so far to provide coal mined in the Philippines have failed. Several tests of Philippine coal have been made on coast guard vessels and they indicated that it was of fair quality and compared favorably with Japanese and Australian coals. Up to the present time, however, the quantity obtainable is very small and the expense apparently great. The native coal used in tests has been furnished free of cost to this bureau.

POOR MATERIAL IN SHAFTS OF CUTTERS BUILT AT SHANGHAI.

The last annual report stated that the tail shafts of the "Shanghai" cutters *Mindanao*, *Leyte*, *Buruanga*, and *Masbate* had been broken and their propellers lost at sea; that it seemed advisable to dry dock all the other Shanghai cutters and examine their shafts to ascertain if safe to continue in service; and that upon docking the *Samar*, *Luzón*, and *Negros* for this purpose it was found necessary to put new shafts in them because of the dangerous condition of the old ones.

Between June 30, 1904, and the time of completion of our own dock in December, 1904, the other Shanghai cutters *Balabac*, *Mindoro*, *Basilan*, *Corregidor*, *Polillo*, *Panay*, *Palawan*, and *Tablas* were hauled out of water at the Varadero de Manila plant, Cafiacao. It was decided advisable to replace the shafts on all of these vessels except the *Mindoro* and *Panay*, which has been done.

There has been no settlement between Messrs. S. C. Farnham, Boyd & Co., of Shanghai, China, and the government of the Philippine Islands of the claims against the former for failure to fulfill the terms of the contracts under which they constructed 15 cutters for this bureau. The government is still holding a certified check for \$30,000 which was deposited by Farnham, Boyd & Co. at the time contracts were entered into to guarantee their fulfillment of the contracts. The government is also withholding payment of \$3,600 for two propellers and two shafts purchased of them to replace shafts broken and propellers lost thereby.

REPAIRS AT CAVITE NAVY-YARD.

The Cavite navy-yard has continued to show this bureau every courtesy and has done such work as we have asked, but owing to the completion of our own shops there has been very little work desired from them lately outside of awning making.

PRESENT FLEET OF THE BUREAU.

The following is a list of the vessels now operated by the bureau: By the division of light-house construction, the 25-ton sloop *Jervey* (the only sailing vessel belonging to the bureau); by the division of light-house maintenance, the light-house tenders *Corregidor*, *Romblon*, and *Picket*, the first two of cutter class and the third of seagoing launch class; by the division of vessels, the cutters *Luzón*, *Negros*, *Balabac*, *Busuanga*, *Samar*, *Mindoro*, *Mindanao*, *Panay*, *Marinduque*, *Palawan*, *Leyte*, *Polillo*, *Basilan*, and *Tablas*; the seagoing launches *Rover* and *Ranger*, of first class; the seagoing launches *Troy*, *Cabra*, and *Philadelphia*, of second class; the harbor launches *Bohol* and *Cuyo*, of first class; the harbor launches *George Tilly* and *Suerte*, of second class; the harbor launches *Igorrote*, *Pepe*, *Tender*, and *Pasig*, of third class.

COST OF OPERATING AND MAINTAINING VESSELS.

The cost of operation and maintenance of the little sailing sloop *Jervey* for the year was ₱3,075.50.

The average cost per annum of operation and maintenance of the different classes of steam vessels is about—

For light-house tenders of cutter class.....	₱56,000.00
For light-house tender <i>Picket</i>	30,000.00
For cutters.....	56,000.00
For seagoing launches of first class.....	29,000.00
For seagoing launches of second class.....	20,000.00
For harbor launches of first class.....	11,000.00
For harbor launches of second class.....	7,250.00
For harbor launches of third class.....	3,000.00

SUMMARY OF EXPENDITURES FOR FISCAL YEAR.

The following is a statement of bureau expenditures for the year ended June 30, 1905:

For salaries and wages of officials, clerks, messengers, etc., at Manila.....	₱85,243.33
For contingent expenses.....	6,049.94
For improvement of Engineer Island, Manila.....	29,137.19
For marine railway and machine shop.....	291,205.02
For light-house construction division.....	304,466.68
For light-house maintenance division.....	378,563.38
For division of vessels.....	1,159,342.28
Total.....	2,254,007.82

REPORT OF BUREAU OF COAST GUARD AND TRANSPORTATION. 277

However, on account of repair work done by the shops and marine railway of the division of vessels for other branches of this bureau and for other bureaus of the civil government and for the United States Army and Navy, and paid for out of appropriation for cutters and launches, division of vessels, the division of vessels collected ₱46,218.40 as reimbursement.

The division of vessels is also entitled to a credit of ₱5,230.58, that amount of cash having been collected by it and turned into the treasury to cover charges on private freight and passenger traffic carried, the bureau having tariffs in effect between isolated ports to which commercial vessels do not ply or which they seldom visit.

VALUATION OF BUREAU PROPERTY.

The valuation of property accounted for to the auditor at the end of the fiscal year, exclusive of grounds, buildings, and fixtures, was as follows:

Furniture, office fixtures, and stationery.....	₱11,138.32
Property of light-house construction division.....	59,176.28
Property of light-house maintenance division.....	571,923.00
Property of division of vessels.....	2,529,081.57
Total.....	3,171,319.15

DETAILS OF OPERATIONS.

For the details of operations and expenses of the bureau see the report attached from the light-house engineer, light-house inspector, marine superintendent, and paymaster.

DIVISION OF LIGHT-HOUSE CONSTRUCTION.

LIGHT-HOUSE APPARATUS REPAIR SHOP.

A small building of concrete and steel has been erected and light machinery, to be run by electric motor, installed therein for repair work on light-house apparatus. This shop is expected to do away with the necessity of sending considerable apparatus abroad for repair by the manufacturers.

PROGRESS IN CONSTRUCTION OF LIGHT-HOUSES AND MINOR LIGHTS.

Attention is invited to inclosed report of Capt. Spencer Cosby and accompanying blueprint showing the light-house system of the islands. A plan of illumination of the islands is being rapidly carried out. The coast line is extensive, but if work is continued at present rate for a few years more it is thought that a good system of lighting will then be in operation all over the islands.

DIVISION OF LIGHT-HOUSE MAINTENANCE.*

APPRENTICES.

The education of apprentices has been carried on under the management of the light-house inspector, in addition to the ordinary routine of conducting operations.

BUOY SHED.

A long-felt want has been filled by the construction on Engineer Island of a shed for the storage of buoys, lifeboats, and other large or heavy articles used by the maintenance division.

OPERATIONS.

This division operates three light-house tenders, the *Corregidor*, *Romblon*, and *Picket*, and is charged with the work of maintaining and supplying these vessels, all light-houses and lights, the laying and overhauling of buoys, the placing of day marks, etc. For details of work in the past year see attached report of the light-house inspector.

* Capt. Alexander Franklyn, light-house inspector in charge of the division of light-house maintenance, died on July 10, 1905, of pernicious malarial fever; consequently his report is completed and signed by Mr. C. E. Piatt, acting light-house inspector. Captain Franklyn was an indefatigable worker and an unusually competent and valuable officer.

DIVISION OF VESSELS.

VESSELS COMMISSIONED.

(1) The 86-foot harbor launch *Bohol* was bought at Hongkong from Lysaught & Co., for the sum of ₱17,000, Mexican currency, on November 28, 1904, to be delivered at Manila.

(2) The sea-going launch *Philadelphia* was transferred to this bureau in March, 1905, by the board of health.

(3) The *Igorrote* (named the *George Curry* when operated by the police department) was turned over to this bureau by the river and harbor police in February, 1905, being then considered by them unfit for further work and not worth repairing. She has since been used carrying men and materials between Engineer Island and the ships undergoing repairs and performing other such light work.

VESSELS OUT OF COMMISSION.

(1) The launch *Pittsburg* was condemned by a board of survey and dismantled. The hulk is now tied up against the seawall on Engineer Island and used as a home by some of the patrons and sailors operating the river and harbor launches.

(2) The stern-wheel flat-bottom river steamer *Sentinel* struck a snag in the Cagayán River near Alcala, Cagayán Province, island of Luzón, on February 23, 1905, and sank. She was raised and towed to the dry dock of the Compañía General de Tabacos de Filipinas at Camalaniugan, near Aparri. A survey was there held, and it was decided that owing to weak construction originally and her two years' service, and the very high price of labor and material on the Cagayán River, and the difficulty attending vessel repairs of any kind there, it would be cheaper to condemn the hull and bring the machinery and other parts of value to Manila and there build a new hull if it should finally be decided advisable to put another boat on the Rio Grande de Cagayán.

(3) The cutter *Masbate* was driven high up on a reef near Hignum Island, northeast coast of Samar Province, on December 15, 1904, due to the bad judgment of her captain in trying to navigate dangerous, unknown, and unsurveyed waters before daylight. No lives were lost.

On April 30, 1905, Capt. C. F. Garry, of Manila, entered into a contract with the government, agreeing for the sum of ₱9,500 to float and bring the *Masbate* to Manila. Up to June 30 he had not succeeded in the undertaking, but it is hoped this vessel will finally be floated, repaired, and recommissioned.

For courage displayed and conspicuous service in saving life and property at the time of the wreck of the *Masbate*, First Officer Werner Tornroth of that vessel was awarded a gold medal by resolution of the Philippine Commission.

ADVENTURES OF THE "ROVER."

The seagoing launch *Rover* met with misfortune twice during the year.

On February 17, 1905, when near Romblon, she lost her propeller and had to be towed to Manila for repairs.

On April 28, 1905, she was caught in a typhoon and blown ashore in Badagona Bay, Panay Island, northeast of Catanduanes Island, east coast of Luzón Island. The cutter *Negros* was sent to assist her, but upon arrival found that the crew of the *Rover* had already gotten her off. The *Negros* then towed her to Manila for repairs. She was strained and required an extensive general overhauling. She resumed duty with the constabulary bureau on June 30.

MARINE RAILWAY.

The marine railway on Engineer Island, Manila, was formally accepted from the contractors (the Atlantic, Gulf and Pacific Company) in February, 1905. It has been in constant use since December, 1904, and is apparently satisfactory in all respects.

To June 30, 1905, some 57 vessels of varying sizes have been docked on this marine railway for repairs. These vessels belonged to this bureau and other branches of the civil government, to the Quartermaster's Department of the United States Army, and to the United States Navy.

GENERAL REPAIR SHOP.

The new and principal shop on Engineer Island, consisting of machine, blacksmith, and woodworking departments, has been in operation since January, 1905, and therein machinery has gradually been installed until it is now quite well equipped to handle almost all classes of repair work required by vessels not exceeding a thousand tons displacement.

Boilers and engine to run this shop have been installed and a concrete power house inclosing same is nearing completion. While installing the regular boilers and engine the machine shop has been run continuously, power being furnished by an old boiler and engine taken from one of the launches condemned and dismantled.

NATURE OF VESSEL SERVICE.

From 6 to 10 cutters have been run on regular routes about the islands to facilitate the transaction of government business generally. Launches and other cutters have performed special and varied duties, such as:

(a) Assisting the constabulary and United States troops in their operations against Pulajanes in Samar Province.

(b) Assisting the constabulary and United States troops in their operations against ladrones in Cavite Province.

(c) Assisting the constabulary troops in suppressing petty outbreaks in other provinces.

(d) Cooperating with the customs authorities in suppressing smuggling from Borneo into the Sulu Archipelago.

(e) Carrying mail, freight, troops, prisoners, and traffic of all kinds for the government.

The regular routes remain practically the same as a year ago. They are as follows:

(1) Trip commencing 1st and 15th of each month from Manila to Iba, Bolinao, San Fernando Unión, Candon, San Esteban, Vigan, Salomague, Laoag, Aparri and return.

(2) Trip commencing 1st and 15th of each month from Manila to Batangas, Lucena, Boac, Pasacao, Sorsogón, Calbayog, Catbalogan, Tacloban, Surigao and return.

(3) Long trip from Manila to Coron, Culió, Halsey Harbor, Cuyo, Iloilo, Puerto Princesa, Balabac, Cape Melville, Coron and return. Short trip from Manila to the same points, excepting Balabac and Cape Melville. These trips are made alternately as often as vessel can perform the work. Five weeks are usually consumed in making the two round trips and preparing to repeat them.

(4) Trip commencing the 4th of each month from Manila to Lucena, Masbate, Sorsogón, Matnog, Legaspi, Virac, Tabaco, Bicol River (account Nueva Cáceres), Pandan, Daet, Atimonan, Mauban, Binangonan, Polillo, Baler, Kasiguran and return.

(5) Trip commencing 6th and 20th of each month from Manila to Romblón, Cápiz, Iloilo, Bacolod, Concepción, Calivo, Pandan, Bugasan, San José, San Joaquín and return.

(6) Trip commencing the 1st and 15th of each month from Cebú to Poro, Bogo, Escalante, Tiburan, Balamban, Toledo, Valle Hermoso, Barili, Dumanjug, Tayasan, Bais, Dumaguete, Oslob, Tagbilaran, Dalaguete, Argao, and Cebú.

(7) Trip commencing the 6th of each month from Tacloban to Carigara, Caibiran, Naval (Biliran Island), Leyte, San Isidro, Villaba, Palompon, Ormoc, Cebú, Baybay, Hindang, Hilongas, Maásin, Malitbog, Liloan, Cabalian, Hinunangan, Abuyog, and Tacloban. Another trip commencing 20th of each month from Tacloban to Catbalogan, Calbayog, La Granja, Catarman, Laguan, Oras, Borongan, Guinan, Balangiga, and Tacloban.

(8) Trip commencing the 1st of each month from Zamboanga to Tucuran, Cotabato, Dávao, Baganga, Mati, Zamboanga, Joló, Siasi, Bongao and return to Zamboanga.

(9) Trip commencing 1st and 15th of each month from Cebú to Dumaguete, Dapitan, Oroquieta, Misamis, Iligan, Camp Overton, Cagayán, Mambajao, Surigao and return.

(10) Trip commencing the 9th and 24th of each month from Manila to Calapan, Romblon, Masbate, Cebú, Dapitan, Zamboanga, Joló and return.

Very respectfully,

J. M. HELM,

Commander, U. S. Navy,

Chief of Coast Guard and Transportation.

The SECRETARY OF COMMERCE AND POLICE,
Manila, P. I.

EXHIBIT 1.

REPORT OF LIGHT-HOUSE ENGINEER.

DIVISION OF LIGHT-HOUSE CONSTRUCTION,
BUREAU OF COAST GUARD AND TRANSPORTATION,
Manila, P. I., August 1, 1905.

SIR: I have the honor to submit the following report of operations of the division of light-house construction for the fiscal year ending June 30, 1905:

During the year Capt. Spencer Cosby, Corps of Engineers, U. S. Army, was in charge of this division, with First Lieut. James F. Bell, Corps of Engineers, U. S. Army, as assistant.

CONDITIONS AT BEGINNING OF YEAR.

Field parties of from 30 to 100 men each were at work building new stations for flashing lights at Bagacay and Capitancillo, on the east coast of Cebu, at Tanguingui Island, south of Masbate, and at Bagatao Island, at the entrance to Sorsogón Bay. Another party was engaged in completing the station on the island of San Bernardino, and a repair party was at work at Lusaran, at the southern extremity of Guimaras Island, building a heavy concrete retaining wall around the brow of the hill on which the light-house tower and dwelling are situated. An additional party was being organized to undertake the construction of a third-order light station on Apo Reef, off the west coast of Mindoro.

The first flashing light in the Philippines to be operated under the new and powerful system of incandescent burners with petroleum vapor had been established experimentally at Siete Pecos and was being carefully watched to determine the practicability of extending the system to other lights.

The office force was well organized and doing excellent work, but was occupying cramped quarters in the old captain of the port's office on the north bank of the Pasig.

Seventy-six lights were in operation, including 19 flashing lights, 3 fixed lights, and 54 minor lights (lens lanterns, post lanterns, and electric arc lights).

WORK ACCOMPLISHED DURING THE YEAR.

A survey party was organized under an American engineer with native assistants and was engaged during a large part of the year in surveying sites for proposed new stations, and in marking the boundary lines of existing and proposed reservations.

The work of building new stations at Bagacay, Capitancillo, Tanguingui, and Bagatao was completed, and these flashing lights are now in full running order. The old station on the island of San Bernardino was finally placed in finished condition and the working party withdrawn before the beginning of the winter monsoon. The building of the retaining wall and various other repairs at Lusaran were completed and that station left in excellent order.

The field party organized for the construction of the new station on Apo Reef began work there early in July and had practically completed the tower and buildings at the end of the year. The installation of the lantern and optical apparatus and the execution of some unimportant details still remain to be done.

Upon completion of the work at Bagatao and Tanguingui the parties at those places were reorganized and sent to build new stations for flashing lights at San Fernando, on the west coast of Luzón, and at Maniguin Island, off the northern part of the west coast of Panay. The light at San Fernando was put in operation on April 1, and the party was shortly afterwards sent to build a similar station on Sueste Point, at the entrance to Subig Bay, where they are now at work. The construction of the reinforced concrete tower and buildings at Maniguin had made excellent progress at the end of the year.

In the early part of April a new party was organized and sent to begin the erection of a large light-house at Cape Bolinao, on the west coast of Luzón. Only the preparatory work has so far been accomplished.

Many difficulties have been met with, as was expected. Chief among these are the long distance from the site to the nearest safe harbor and the impossibility of landing materials on the exposed coast in the immediate vicinity of the station, except under the most favorable weather conditions. Still it is believed it can be completed well within the limits of the amount appropriated. This will be one of the important landfall lights of the islands and is to be built throughout of reinforced concrete. This new system of construction has been extensively used during the year and is now adopted for all important permanent structures built by this division. Its use will, it is thought, not only reduce the cost of construction and maintenance, but will give greater strength to resist the destructive effects of both typhoons and earthquakes.

A flashing light was installed in August in the small tower erected by the Spaniards to mark the outer end of San Nicolás shoal, Manila Bay. It did not prove entirely satisfactory and was replaced by a fixed light in June.

Many changes were made in the minor lights during the year. A number of them were replaced by others more powerful and visible at a greater distance, while new lights were installed at points where they seemed most urgently needed.

To display the larger and more important of these, 9 wooden towers, giving the focal plane an elevation of 35 feet above the ground, were constructed in Manila, and 7 have already been erected in place. The lower parts of these towers are of Molave, set in concrete pillars, and the remaining parts are some of Oregon pine and some of Philippine hardwood.

At other places towers of different heights, tripods, posts, or poles were erected to support the light.

Four unlighted beacons were constructed to mark dangerous rocks in or near navigable channels.

Two occulting lights, the first of the kind to be used in the Philippines, were put in operation and have so far proved most satisfactory. They are reliable, economical, and show a distinctive characteristic.

• The incandescent system of burners was installed in three of the new flashing lights erected during the year. Experience, however, showed that the French burners used are not suited to sixth order lights, in this climate at least, as the intense heat cracked many of the lenses and prisms. In the third and fourth order lights, where the optical panels are at a greater distance from the burner, no trouble of this kind was experienced and two of these are in successful operation on the incandescent system.

Repair parties were kept constantly at work during the year putting in good condition stations at which damages were reported or changes needed. The general condition of the stations throughout the islands is now excellent.

A stock of the materials most often needed in repair work was purchased and stored in the warehouse, so that urgent calls can hereafter be promptly met. A small repair shop was built just outside the warehouse, and a lathe, milling machine, and other tools with an electric motor to run them, were installed. This should enable many parts of lanterns and apparatus to be replaced and repaired here, instead of in Paris, as heretofore, and should result in a saving of both time and money.

The office was moved to more commodious quarters on Engineer Island, in the immediate vicinity of the warehouse. Few changes were made in the force, which is hard working and efficient.

Detailed reports, with statements of cost, of the operations referred to above are given hereafter.

NEW LIGHT-HOUSES.

The total number of lights in operation was increased from 76 at the beginning of the fiscal year to 89 at its close, including 23 flashing lights, 2 occulting lights, 3 fixed lights, 21 sixth order port lights, 38 lens lanterns, and 2 electric arc lights. Two lens lanterns were discontinued officially, though they were left with the local authorities, who may display the lights if they find them needed.

The following new lights were put in operation during the year:

San Nicolas Shoal, Manila Bay.—Sixth order, flashing white light; July, 1904.

Apo Reef, off west coast of Mindoro.—Lens lantern, fixed white light; July, 1904.

Sorsogón Bay, on Bagatao Island at entrance to bay.—Lens lantern, fixed red; August, 1904.

Cagayán, Mindanao.—Sixth order port light, fixed red; October, 1904.

Carigara, Leyte.—Sixth order port light, fixed red; October 22, 1904.

Hermana Mayor, off west coast of Luzón.—Sixth order port light, fixed white; October 28, 1904.

Port Bolinao, Luzón.—Lens lantern, fixed red; October, 1904.

San José, on Corregidor Island.—Lens lantern, fixed red; January, 1905.

Caibalogan Pier, Samar.—Lens lantern, fixed red; January, 1905.

Maniguin, off west coast of Panay.—Lens lantern, fixed white; April 1, 1905.

Gumaca Bar, at entrance to Lucena Harbor.—Lens lantern, fixed red; April, 1905.

Mati, east coast of Mindanao.—Lens lantern, fixed red; May, 1905.

Iloilo City, Panay.—Electric arc light, fixed white; May, 1905.

Manila Breakwater, Manila Harbor.—Sixth order port light, occulting red; June 1, 1905.

Bauan, Luzón.—Lens lantern, fixed red.

CHANGES IN LIGHTS.

The following are the more important changes in existing lights made during the year.

Batangas.—A single red lens lantern of improved pattern was put in place of the two lights in July, 1904.

Tacloban.—The light was erected on a higher structure, giving it a greater range of visibility, in October, 1904.

Palanog.—A sixth order red port light was substituted for the two lens lanterns, white and red, respectively, in November, 1904.

Caibalogan.—A new structure was erected for the light in November, 1904.

Escarce Point.—A more powerful port light was installed.

Santa Cruz and Malalag.—The lights at these two places were stricken from the official list, though it is understood that one at least is displayed by the local authorities.

Zamboanga.—The light was moved and a new platform built for it.

Capitancillo.—The fixed white light was replaced by a fourth order flashing white and red light, January 2, 1905.

Tanguingui.—The fixed white light was replaced by a fourth order flashing white light, in March, 1905.

Bagacay.—The fixed white light was replaced by a third order flashing white light in April, 1905.

San Fernando Point.—The fixed white light was replaced by a sixth order flashing white and red light, April 1, 1905.

Lucena.—The fixed white light was replaced by an occulting red port light in April, 1905.

Dagupan.—The light was moved 200 yards north in May, 1905.

Cape Bojeador.—A white band was painted around the middle of the tower in May, 1905.

Manila Canal entrance.—The fixed red light was changed to a fixed green light, June 1, 1905.

Calbayog.—A more powerful light was installed in June, 1905.

San Nicolás Shoal.—The flashing light was changed to fixed white, June 25, 1905.

Notices to Mariners were issued during the year and widely distributed, giving information as to new lights, changes and irregularities in existing lights, etc.

NEW WORK.

The following is a more detailed description of the work accomplished under the various appropriations made for the construction of new light stations and the completion of those already under way:

BAGACAY.

Construction work on the light station at Bagacay Point was continued and completed early in 1905, and a third order flashing light was installed and lighted about April 1.

During the fiscal year the upper half of the masonry tower was completed, the wooden keepers' dwelling was finished, and a kitchen, storeroom, cistern, etc., were constructed.

Money statement.

Estimated cost	₱75,000.00
Expended:	
Materials	₱21,959.83
Apparatus	15,444.91
Subsistence	8,139.18
Wages	26,435.71
	<hr/>
	71,979.63
	<hr/>
	3,020.37

CAPITANCILLO.

A new fourth order light station was in course of construction on Capitancillo Island, east of the island of Cebu, at the beginning of the fiscal year.

The force consisted of 3 Americans and about 80 natives, but was reduced somewhat as the work neared completion.

The work included the completion of the steel tower, masonry keepers' dwelling, annex, cistern, retaining wall, etc., and the installation of a fourth order flashing light, which was first lighted on January 2, 1905.

Money statement.

Estimated cost	₱80,000.00
Expended:	
Materials	₱32,631.79
Subsistence	10,585.83
Wages	32,913.48
	<hr/>
	76,131.10
	<hr/>
	3,868.90

TANGUINGUI.

The light station on Tanguingui Island, which was in course of construction at the beginning of the fiscal year, was completed, and a fourth order flashing light installed and lighted about March 1, 1905.

A force of 3 Americans and about 100 natives were employed until the work was nearly completed, when the force was somewhat reduced and the construction party was all taken away several weeks before the machinist was ready to install the apparatus.

The work included the erection of a steel tower 113 feet high, construction of concrete keepers' dwelling, annex, etc.

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Money statement.

Estimated cost.....	₱60,000.00
Expenditures:	
Materials.....	₱25,240.45
Subsistence.....	8,073.36
Wages.....	26,050.38
	<hr/>
	59,364.19
	<hr/>
	635.81

BAGATAO.

The sixth order light station on Bagatao Island, at the entrance to Sorsogón Bay, which was almost finished at the end of the last fiscal year, was completed, and the construction party brought to Manila in August.

Money statement.

Estimated cost.....	₱30,000.00
Expenditures:	
Apparatus.....	₱5,293.90
Materials.....	7,502.18
Subsistence.....	3,312.28
Wages.....	13,164.01
	<hr/>
	29,272.37
	<hr/>
	727.63

SAN BERNARDINO.

The party which was completing this station at the beginning of the fiscal year, finished their work and was taken off the island the latter part of July.

The work done consisted of several small items, such as the completion of the ironwork and roofing of the porch, glazing, trimming, erection of signal mast, etc., which had been left undone when it had been found advisable to remove the construction party the previous year in September, as a landing can not be made at that island during the winter months.

Money statement.

Estimated cost.....	₱5,000.00
Expended:	
Materials.....	₱2,096.42
Subsistence.....	822.43
Wages.....	1,420.96
	<hr/>
	4,339.81
	<hr/>
	660.19

APO REEF.

A party consisting of 1 American engineer and 37 natives was organized in July, 1904, and sent to this station, leaving Manila on July 5. On August 5 another American was added to the party, and natives were added from time to time as the work demanded.

The Spanish Government had purchased the tower and lighting apparatus, which were found stored in Manila. An examination of the tower showed it to be in excellent condition, with only a few parts missing. These were either made in Manila or contracted for in Shanghai.

After constructing temporary quarters and a scow for landing materials the party began work on the station proper. It has progressed continuously to date with the exception of a few delays caused by lack of fresh water.

As none is found on the island or in the immediate vicinity, it has been necessary to supply water for drinking purposes from Manila, Romblón, or the adjacent coast of Mindoro.

The sloop *Jervey* was sent to the station about the 1st of August, but on account of the dangerous anchorage was later transferred to another station.

The dwelling and accessory buildings were built of reinforced concrete.

The assistant overseer and the larger part of the party arrived in Manila June 22, 1905. The overseer and the remainder of the party are now waiting transportation to Manila, as the station is practically completed.

The lighting apparatus can not be installed for some months, as it is necessary to make several missing parts. This work is being done in the new repair shop.

Money statement.

Estimated cost.....	₱65,000.00
Expended:	
Apparatus.....	₱8,344.51
Materials.....	18,934.19
Subsistence.....	8,155.33
Wages.....	25,281.81
	<hr/>
	60,715.84
	<hr/>
	4,284.16
Liabilities:	
Apparatus.....	1,800.00
	<hr/>
	2,484.16

MANIGUIN.

A party of 2 Americans, 1 Spanish mason, and 40 natives was organized in December, 1904, and sent to this station, leaving Manila on December 29. On March 20, 1905, the party was increased to a total of 106 by the employment of local laborers.

After constructing temporary quarters work was begun on the tower and exceptional progress has been made.

The tower, dwellings, and accessory buildings will be of reenforced concrete. A contract has been let in Hongkong for the iron stairs, which are to be delivered early in August.

As this station is the first to be constructed throughout from new plans prepared under the American Government, the high standard and speed of construction, in connection with the low cost, is gratifying. On all previous stations it has been necessary either to use materials purchased or plans prepared under the supervision of the Spanish Government.

The permanent work completed to date is as follows: Tower constructed to balcony, eastern built, foundation of dwelling finished, doors, windows, and louvres made.

The sloop *Jervey* has done excellent service at this station in transporting laborers and water.

Money statement.

Estimated cost.....	₱60,000.00
Expended:	
Apparatus.....	₱8,253.03
Materials.....	11,954.44
Subsistence.....	5,182.99
Wages.....	14,405.14
	<hr/>
	39,795.60
	<hr/>
	20,204.40
Liabilities:	
Metal work.....	5,000.00
Materials.....	3,000.00
	<hr/>
	8,000.00
	<hr/>
	12,204.40

BOLINAO.

The preliminary survey having failed to locate a suitable landing place near the site chosen for the station on Point Piedra, the party of 1 American engineer, 2 American assistant overseers, and 15 natives were landed at Balingasay on April 12, 1905.

It was thought that it would be necessary to build or repair the 7 miles of road from Balingasay to the site, but further investigation disclosed the fact that building materials could be landed at Point Piedra in very calm weather. This it is hoped will save the costly transportation of materials by carabao carts, except at rare intervals.

As the local laborers were found unreliable, it was necessary to complete the organization of the party with natives from San Fernando and Manila.

On May 27 the engineer in charge was relieved and succeeded by an experienced overseer on June 10.

Most of the preliminary work has been done and the construction of the station proper will begin in the near future.

The party has been increased to a total of 111. Considerable material has been landed and the progress of the work is now satisfactory.

The tower, dwelling, and accessory buildings will all be constructed of reenforced concrete.

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Money statement.

Estimated cost.....		₱120,000.00
Expended:		
Materials.....	₱4,261.24	
Subsistence.....	3,472.63	
Wages.....	4,737.17	
		<u>12,471.04</u>
		107,528.96
Liabilities:		
Materials.....	5,000.00	
Apparatus.....	22,000.00	
		<u>27,000.00</u>
		80,528.96

SAN FERNANDO POINT.

A construction party was sent to San Fernando Point the latter part of September, from which time work was carried on by 2 Americans and about 40 natives and chinios until the new flashing sixth-order light was lighted on April 1, 1905.

An iron tower, frame dwelling set on molave posts in concrete pillars, a concrete kitchen and storehouse, concrete oil and paint house, concrete cistern, and board latrine and fence were constructed.

The party also removed the old structure at San Fernando Point and made some alterations in the range marks at that place.

Money statement.

Cost:		
Apparatus.....	₱5,975.50	
Materials.....	7,096.33	
Subsistence.....	2,626.35	
Wages.....	9,726.41	
		<u>25,424.59</u>

(Part of cost of apparatus charged to appropriation for "Improvement of existing lights," Act No. 807.)

SUBIG BAY.

It had been the intention to begin work on the light station at Subig Bay early in the fiscal year, but its construction was delayed until April, 1905, in order to avoid any possible conflict of plans with the coast defenses to be erected there, whose location had not been definitely decided on earlier.

The San Fernando Point party were transferred to this place and have begun work on Sueste Point on the north side of the entrance, which has been chosen as the site for the light instead of Grande Island, where it was the original intention to erect the light before it was decided to place batteries there.

The old incomplete tower on Grande Island was removed to the new site, temporary buildings and storehouses were erected, a road was built, and nearly all the necessary materials were delivered.

Excavations and foundations for the tower, dwelling, etc., have been begun and the station should be completed in about four months.

Money statement.

Estimated cost.....		₱24,000.00
Expenditures:		
Apparatus.....	₱5,049.15	
Materials.....	5,511.55	
Subsistence.....	895.79	
Wages.....	2,315.18	
		<u>13,771.67</u>
		10,228.33

Liabilities:

Materials.....	₱2,000.00	
Subsistence.....	700.00	
Wages.....	1,200.00	
		₱3,900.00
		6,328.33

(Apparatus paid from appropriation for "Improvement of existing lights," Act No. 807.)

SAN NICOLÁS SHOAL.

A new flashing sixth-order white light was installed in the light-house tower on San Nicolás Shoal, Manila Bay, in August, 1904, and maintained until June, 1905, when it was changed to a fixed white sixth-order light.

The rotating apparatus had not proved very reliable, and as this tower is inaccessible a great deal of the time during the southwest monsoon it was thought best to install the apparatus at some point where its electric motor could have better care and attention. It will soon be installed in the Pasig light-house.

Money statement.

Cost:

Apparatus.....	₱4,643.50
Materials.....	80.22
Subsistence.....	148.78
Wages.....	247.10
Total.....	5,119.60

MINOR LIGHTS AND BEACONS.

Batangas.—The two red lens lanterns at Batangas were discontinued, a substantial tripod erected, and a more powerful red-lens lantern was installed.

Sorsogón Bay.—A fixed red lens lantern was erected on Bagatao Island, entrance to Sorsogón Bay, in connection with the work at Bagatao Light Station, and was lighted early in the fiscal year.

Cagayán.—A red sixth-order port light was erected on a wooden tower at Cagayán, Mindanao.

Tacloban.—A new wooden tower was erected at Tacloban in place of the old one, which did not give the desired elevation.

Santa Rita.—An unlighted beacon of concrete and wood was erected on Santa Rita Rock, San Juanico Straits.

Carigara.—A red sixth-order port light was erected on a wooden tower at Carigara, Leyte.

Iloilo.—In connection with the custom authorities at Iloilo a 1,600-candle power arc light was established on the pilots' watchtower there.

Hermana Mayor.—A white sixth-order port light was erected on a wooden tower on Hermana Mayor Island, off Zambales.

Port Bolinao.—A fixed red lens lantern and a white target for a day mark were established at Port Bolinao.

Palanog.—The white and red lens lanterns at Palanog were taken down and a fixed red sixth-order port light was erected in their place on a wooden tower.

Catbalogan.—A new structure was erected for the light at Catbalogan.

Escarceo Point.—A more powerful port light was installed at Escarceo Point and the arc of visibility changed and corrected.

San Vicente.—An unlighted beacon of concrete and wood was constructed in Port San Vicente.

San José.—A fixed red lens lantern was erected on the wharf at San José, Corregidor Island.

Lucena.—An occulting port light was erected on a new wooden tower 57 feet high at Lucena in place of the fixed white lens lantern previously displayed.

Gumaca Bar.—A fixed red lens lantern was erected on a pole to mark the channel across the bar at the mouth of the Gumaca River, Tayabas Province.

Mati.—The fixed red lens lantern intended for Malalog, Mindanao, was erected instead on a wooden tower at Mati, Mindanao.

Manila Breakwater.—A concrete dwelling for the keeper and an occulting red sixth-order port light on an iron mast were erected on the southern end of the west breakwater, Manila Bay.

It was necessary to anchor this building to the breakwater with steel rods and angles and to reinforce it strongly throughout, as waves pass entirely over it in very bad weather.

Black Rock.—An unlighted beacon of concrete and wood was erected on Black Rock, in Black Rock Channel, east of Masbate Island.

Calbayog.—The old light structure at Calbayog was almost destroyed by a typhoon. The red lens lantern was subsequently replaced by a fixed red sixth-order port light erected on a new wooden tower.

Catbalogan Pier.—A small fixed red lens lantern was erected to mark the location of the pier at Catbalogan.

An unlighted beacon, consisting of a structure of iron pipes supporting white wooden targets, was erected on Lutao Shoal at Catbalogan.

Money statement.

Expenditures:

Apparatus	₱10,137.25
Materials	2,776.10
Subsistence	558.34
Wages	3,053.13
Total	16,522.82

REPAIR WORK.

No extensive repairs had to be executed at any one station during the year, but some repair work was found necessary at a number of stations on account of damage done either by storms or by white ants or from the natural deterioration of materials. The following are the stations at which most work was done under the appropriation "Repairs to light stations:"

Luzaran.—The repair work being done at this station at the beginning of the fiscal year was completed and the party taken away early in August.

Cotabato.—The structure supporting the light at the mouth of the Rio Grande de Mindanao, which was carried away by a flood, was replaced.

Siete Pecados.—The tower, roof, and porch of dwelling, etc., at Siete Pecados were damaged by a typhoon in July and repaired during August.

Escarceo Point.—The keeper's dwelling at Escarceo Point was rebuilt and a few other repairs made to the station.

Zamboanga.—The light at Zamboanga was moved to a new location.

Dagupan.—Exorbitant claims having been made for the ground on which the light was located at Dagupan, and the keeper's dwelling being in very bad condition, the light was moved to a new site, which belongs to the government, and a new dwelling and light structure were erected.

Cape Engaño.—A few repairs were made to the roofing, drains, etc., at Cape Engaño.

Linao.—This station had not been altogether completed by the Spaniards. The station was completed and necessary repairs to floors, etc., were made.

Corregidor.—The bamboo fence at Corregidor Light Station being found in bad condition was replaced by one of posts and boards.

The system of gutters was changed so as to increase the water supply.

A latrine was built, new floors were put in the keepers' dwellings, and precautions were taken to prevent damage by "anay" as far as possible.

Santiago.—Repairs were made to the floors and walls at Santiago, the old latrine was converted into a storeroom, a new latrine was built, and many necessary repairs to windows, doors, etc., were made.

Money statement.

Amount appropriated	₱30,000.00
Expended:	
Apparatus	₱528.18
Materials	10,845.41
Subsistence	5,587.24
Wages	7,748.39
	24,709.22
	5,290.78
Liabilities:	
Apparatus	2,600.00
Materials	2,500.00
	5,100.00
	190.78

SURVEYS.

Surveys were made at the following points during the fiscal year: Dagupan, Cape Bolinao, Sueste Point, Isabel Island, Point Dumali, Lucena, Sabang Point, Escarceo Point, Maniguin, Culión, and Calbayog.

The boundary lines of some of the old reservations were determined and marked with appropriate monuments.

Part of the survey work was done to determine sites for proposed new light stations and part of it to mark the boundaries of the desired reservations so they could be set aside for light-house purposes.

Money statement.

Cost:	
Materials	₱2,006. 18
Subsistence	831. 01
Wages	2,324. 21
Total	5,161. 40

IMPROVEMENT OF EXISTING LIGHTS.

The appropriation of ₱8,000, made for this purpose by Act No. 1225, was applied to the purchase of the following: Occulting sixth-order port lights to take the place of fixed lights; pinion to increase the speed of the flashing light at Jintotolo; lantern and apparatus for converting a fixed into a flashing light; the necessary parts to convert the polygonal lantern at Corregidor into a cylindrical lantern, and to replace its present burner by an incandescent one.

Money statement.

Amount appropriated.....	₱8,000. 00
Expended for apparatus.....	3,299. 77
	₱4,700. 23
Liabilities (converting fixed into occulting light with lantern and improving Corregidor light).....	4,700. 23

STOREHOUSE AND REPAIR SHOP.

The new storehouse was completed by the bureau of architecture soon after the beginning of the fiscal year. From it were shipped to the various stations practically all the materials, tools, and supplies used in construction and repair work.

Adjoining the storehouse a small repair shop was built by this office of reenforced concrete, and in it were installed a lathe, milling machine, and other tools, with an electric motor to run them. Current is to be furnished by the Electric Lighting Company of the city, but connection with its new lines had not been made at the end of the year. Minor repairs and changes in apparatus and various small parts needed were made by the office force.

Money statement.

Amount appropriated.....	₱12,000. 00
Expended:	
Materials.....	₱756. 56
Wages.....	11,091. 72
	11,848. 28
	151. 72

PROPOSED WORK DURING COMING YEAR.

The construction of the new stations now under way at Apo Reef, Maniguin, Subig Bay, and Bolinao should be completed and the lights put in operation.

Several port lights and lens lanterns on hand will be installed at points where they are most needed. If funds are provided other lights of the same kind will be purchased and installed.

An occulting port light is kept in store to be erected at the end of the new breakwater at Iloilo as soon as it is finished.

The flashing apparatus taken from San Nicolás shoal is to be placed in the Pasig River light-house in July if possible.

A lantern and the necessary parts have been ordered to convert one of the fixed sixth-order lights, now on hand, into a fixed white light varied by red flashes. It is to be erected at Zamboanga or some other point where it is most needed. If funds are provided additional parts will be ordered to convert similarly some of the other fixed lights in stock.

A new rotating mechanism has been ordered for the first-order light at Cape Engaño, and will be installed as soon as received.

The necessary parts should be received from Paris to convert the polygonal lantern at Corregidor into a cylindrical lantern, to diminish the interval between flashes from ten to five seconds, and to replace the wick burner by the incandescent system. These will be installed as soon as received.

An incandescent burner now in stock is to be installed at Cape Santiago.

Several stations are in need of repairs. It is probable that a repair party will be kept constantly at work during the year.

The survey party should be reorganized and used to make topographical surveys of proposed sites for new stations, to lay out new reservations, and to mark the boundaries of those already set aside and not yet marked.

Estimates have been submitted for the construction of a number of new light-houses. Construction work will begin on these if funds are appropriated.

If authorized by law, a southern light-house district will be established with headquarters at Cebú.

Accompanying this report is a blueprint showing the light-house system of the Philippine Islands on July 1, 1905.^a

Value of the property of the division on June 30, 1904 ₱42,466.39, and value of the property of the division on June 30, 1905, ₱59,176.26.

Very respectfully,

SPENCER COSBY,
Light-House Engineer.

To the CHIEF BUREAU OF COAST GUARD AND TRANSPORTATION,
Manila, P. I.

REPORT OF ACTING LIGHT-HOUSE INSPECTOR.

BUREAU OF COAST GUARD AND TRANSPORTATION,
OFFICE OF THE LIGHT-HOUSE INSPECTOR,
Manila, P. I., July 26, 1905.

SIR: The division of light-house maintenance has the honor to submit the following report for the fiscal year ending June 30, 1905:

1. There were maintained by this division at the beginning of the year the following: Flashing lights, 19; fixed lights, 3; smaller lights, 54; total, 76.

During the year there have been 13 new lights established, making the total number of lights at the end of the year as follows: Flashing lights, 23; occulting lights, 2; fixed lights, 3; Sixth-order port lights, 21; lens lanterns, 38; electric arc lights, 2; total, 89.

2. At the beginning of the year there were employed for the care and maintenance of these lights the following: Keepers and assistants, 93; apprentices, 19; boatmen, 40.

During the year the following changes have been made: Keepers discharged, 25; apprentices discharged, 21; boatmen discharged, 25; keepers employed, 28; apprentices employed, 38; boatmen employed, 37; apprentices promoted to keepers, 13.

The following were in the employ of this division at the close of the fiscal year 1905: Keepers and assistants, 109; apprentices, 23; boatmen, 52.

3. At the beginning of the year there were 63 buoys in position. There have been 15 new ones placed during the year, as follows: Manila Bay, 1; Subig Bay, 1; channel to Iloilo, 1; entrance to Sorsogón Bay, 1; Calapan, 1; Puerta Princesa, 1; Clarendon Bay (Balabac Island), 2; Tacloban, 1; Catbalogan, 1; Port San Vicente, 1; fairway to marine railway, Manila, 4.

The temporary bouy placed at San Bernardino Islet has been discontinued, leaving 77 bouys in position at the end of the fiscal year. Fifty-nine of these bouys have been overhauled and painted by light-house tenders and 18 by contract.

4. At the beginning of the year there were 19 beacons in existence. During the year there have been put up the following: Santa Rita Rock, 1; Port Bolinao, 1; Port San Vicente, 1; Black Rock, 1; Clarendon Bay (Balabac Island), 1; San Juanico Straits, 1; Balingasay anchorage, 1; total, 7.

This makes the total of beacons at present 26.

In Act No. 1225 there was appropriated for "buoyage" the sum of ₱27,000, and practically all of this amount has been expended on that item. A buoy shed has been erected on Engineers Island during the past year, in which all buoys will be overhauled, repaired, and painted, and kept until needed.

^aThis blueprint is on file in the Bureau of Insular Affairs, War Department.

5. The light-house tender *Corregidor* (single screw, 412 gross tons, built in Shanghai, 1902) was hauled up on the slip at Cañacao in August, 1904, and her entire bottom was recalked and recoppered throughout; her propeller was taken off and tail shaft examined and a new one was installed, lignum-vitæ renewed, rudder post renewed, and other repairs effected on her deck and in her engine room. In June, 1905, she was hauled up on the slip way of this bureau. A part of her false keel was found to be missing, which was renewed; her tail shaft was drawn in and examined, sea valves ground down, etc.

During the past year she has placed 10 buoys, overhauled and painted 43; she has made 254 visits to light stations, carrying large cargoes of construction material and supplies and many construction parties, steaming 18,728 miles on a consumption of 1,058 tons of coal.

The light-house tender *Picket* (formerly the *Woo Foo*, of Shanghai, twin screw, 128 gross tonnage) was hauled out of the water on the slip way belonging to this bureau once in January and once in May, 1905. Various repairs have been effected on her, among which was the placing of two bilge keels on her, which has made a great difference in her seaworthiness. She has also had a new and stronger cargo boom fitted and different arrangements made in the goose neck of same. Her shafts were examined and lined up and extensive repairs made both to her hull and machinery, putting the ship in as good condition as possible.

During the year she made 147 visits to light stations, carrying construction material, light-house supplies, etc. She has made two long cruises putting up beacons and small lights, steaming 11,196 miles on a consumption of 361 tons of coal. She has overhauled and painted 14 buoys, placed 5 new ones, and altogether has rendered valuable service at a very reasonable expense (see summary of expenses of light-house tenders attached hereto).

The light-house tender *Romblón* (twin screw, 411 gross tonnage, built in Japan, 1903) was detailed to this division in February, 1904, and was formally invoiced to this division July 1, 1904. Her work has been principally in carrying construction material and parties and supplying fresh water to isolated stations under construction. She was put on the slip way of this bureau in the latter part of December and came off in January, 1905. Measurements were taken for two new propellers, which have since been made and will be fitted on her as soon as practicable. Other important repairs have been made to this vessel, among which is the rearrangement and ventilation of her bunkers to guard against possible spontaneous combustion.

During the year she has made 238 visits to light stations and steamed 19,485 miles on a consumption of 847 tons of coal. She has overhauled and painted 2 buoys.

Very respectfully,

C. E. PIATT,
Acting Light-House Inspector.

The CHIEF OF BUREAU COAST GUARD AND TRANSPORTATION,
Manila, P. I.

NOTE.—Capt. Alexander Franklyn, light-house inspector, died July 10, 1905. C. E. Piatt was appointed acting light-house inspector July 11, 1905.

BUREAU OF COAST GUARD AND TRANSPORTATION,
OFFICE OF THE LIGHT-HOUSE INSPECTOR,
Manila, P. I., August 26, 1905.

SIR: In compliance with your instructions I have the honor to submit the following addition to the annual report of the division of light-house maintenance for the fiscal year ending June 30, 1905.

1. The estimated value of the property of this division is ₱571,923, detailed as follows:

Property on hand in warehouse.....	₱88,535.00
Property at light stations.....	62,104.00
Two revenue cutters (tenders).....	265,000.00
One seagoing launch (tender).....	41,500.00
Property on tenders.....	20,701.00
Buoys in position.....	63,992.50
Buoys on hand (spare).....	30,090.50

571,923.00

2. The value of the property in the warehouse at the beginning of the year was ₱47,055. The value of the property in the warehouse at the close of the year is ₱88,535, showing an increase of the year of ₱41,480.

REPORT OF BUREAU OF COAST GUARD AND TRANSPORTATION. 291

Expenses of maintaining light-house tenders Corregidor, Romblón, and Picket during the fiscal year 1904-05.

Light-house tender *Corregidor*:

Salary and subsistence.....	₱28,691.35	
Supplies issued.....	9,866.51	
Repairs.....	2,535.01	
Coal.....	15,265.67	
Laundry.....	104.80	
Pilotage and incidentals.....	316.05	
		₱56,799.39

Light-house tender *Romblón*:

Salary and subsistence.....	29,310.92	
Supplies issued.....	8,004.00	
Repairs.....	9,314.70	
Coal.....	12,027.05	
Laundry.....	89.34	
Pilotage and incidentals.....	276.85	
		59,022.86

Light-house tender *Picket*:

Salary and subsistence.....	18,814.54	
Supplies issued.....	4,779.02	
Repairs.....	3,517.39	
Coal.....	5,353.97	
Laundry.....	63.34	
Pilotage and incidentals.....	135.15	
		32,663.41

C. E. PIATT,

Acting Light-House Inspector.

The CHIEF BUREAU COAST GUARD AND TRANSPORTATION,
Manila.

NOTE.—A table showing the expenses of maintaining the lights of the Philippine Islands during the fiscal year ending June 30, 1905, has been omitted and is on file in the War Department.

EXHIBIT 2.

ANNUAL REPORT OF THE MARINE SUPERINTENDENT, DIVISION OF VESSELS.

BUREAU OF COAST GUARD AND TRANSPORTATION.

SIR: I have the honor to submit the following report of the division of vessels, bureau of coast guard and transportation, for the fiscal year ending June 30, 1905.

Last year's report included the history of the vessels from the time they were built, and an explanation of the different duties of the several vessels.

This year's report includes only the history of the vessels from the beginning of the fiscal year.

ARMAMENT OF THE COAST-GUARD FLEET.

The following list shows the guns and small arms aboard each vessel:

Name.	Hotchkiss (1 pounder)	Gatling gun.	Carbines, caliber .45.	Revolvers, caliber .45.
Negros.....	2	1	12	6
Luzón.....	2	1	12	6
Polillo.....	2	.....	12	6
Busuanga.....	2	1	12	6
Balabac.....	2	1	12	6
Palawan.....	2	.....	12	6
Basilan.....	2	1	12	6
Tablas.....	2	1	12	6
Marinduque.....	2	1	12	6
Mindanao.....	2	1	12	6
Samar.....	2	1	12	6
Mindoro.....	2	1	12	6
Leyte.....	2	1	12	6
Panay.....	2	.....	12	6
Ranger.....	.....	1	4	3
Rover.....	.....	.....	3	3
Troy.....	.....	.....	3	.....
Cabra.....	.....	1	3	3
Philadelphia.....	.....	.....	2	3

The value of the fleet at present is ₱1,774,047.29, which includes 14 cutters in operation the estimated value of the wrecked *Masbate*, 5 seagoing launches, and 8 bay and river launches.

Last year's inventory of the storehouse gave a value of about ₱80,000. The storehouse has increased its value during the past twelve months until now the property on hand is valued at ₱179,060.62.

The machine shops are valued at ₱132,643.87, the marine railway at ₱223,959.13, the ordnance aboard the cutters at ₱119,519.15, the property aboard the cutters and launches at ₱95,185.57, and a derrick and the two or three old scows that we have at ₱4,665.96; in all the division being worth approximately ₱2,529,081.57, exclusive of buildings, grounds, and fixtures.

NEGROS.

[Capt. H. C. Reissar.]

From July 24 until December 29, 1904, the *Negros* was on duty with the third constabulary district, with headquarters at Iloilo, Panay; and from January 2 to April 24, 1905, on regular route No. 1. Since that date the *Negros* has made two trips to the wreck of the *Masbate*, off the east coast of Sámár.

On July 24, 1904, while returning to Manila, this cutter sighted the *Bilibonne* flying distress signals, and upon boarding her found that her rudder was unshipped. Towed her to Romblón.

LUZÓN.

[Capt. John Foster.]

During this year the cutter *Luzón* sailed over routes Nos. 2, 3, and 4, as follows: From July 7 until August 19, 1904, on route No. 3; from September 1, 1904, until April 27, 1905, on route No. 4; and from June 1 to 30, 1905, on route No. 2.

On February 9, 1905, while at Nueva Cáceras, boarded the British steamer *Carlisle*, off Sanpantin Point. The *Luzón* found that she had lost her propeller, and was loaded with supplies for the Russian Government. Report was made to Manila.

POLILLO.

[Capt. Phillip Leblond.]

From July 1 to August 19, 1904, the *Pokillo* was on route No. 9. During the months of September and October she was on special duty at Manila, and on November 1, 1904, she was slightly modified for duty with the Philippine Commission in addition to her general duties.

On May 24, 1905, this vessel sighted the wrecked S. S. *Pharsalia*, near Calantes Rock in San Bernardino Straits. She sent a small boat to the *Pharsalia* on the 6th, took off the captain's wife and child, and brought them to Manila.

MASBATE.

[Capt. T. F. Stewart.]

From July 1 to September 15, 1904, the *Masbate* was serving on route No. 1; from September 15 to October 19, 1904, on route No. 2; from October 19 to November 26, 1904, on route No. 9, having relieved the cutter *Sámár* on that route; and from November 28 until December 15, 1904, on duty with the constabulary operating in Sámár.

On the morning of the 15th of December, 1904, the *Masbate* was wrecked off the east coast of Sámár, on an uncharted reef, while trying to make port during the night at the request of the army officer on duty with the constabulary who was in command of the troops aboard her. All persons on board, 195, passengers and crew, were safely landed. The conduct of First Officer Tornroth is to be especially commended.

BUSUANGA.

[Capt. F. M. White.]

From July 1, 1904, to January 6, 1905, the *Busuanga* sailed over regular routes as follows: From July 9 to August 30, 1904, on route No. 10; from September 1 to November 14, 1904, on route No. 8; from November 15 to December 14, 1904, on route No. 10; from December 15 to 30, 1904, on route No. 8; and from January 1 to 6, 1905, on route No. 10.

On January 21, 1905, the *Busuanga* was assigned to duty with the second constabulary district, with headquarters at Lucena, where she remained until April 30, 1905.

On May 10, 1905, she was placed on route No. 4, where she is at present.

BALABAC.

[Capt. P. J. C. Schoon.]

The *Balabac* was on special duty at Manila from July 1 to November 7, 1904, during which time she made two trips on regular routes, one trip in August over route No. 4 and one trip in November over route No. 2. On November 7 the *Balabac* was placed on route No. 7 and remained on that route until January 24, 1905, when she was assigned to duty with the constabulary operating in Samar and Leyte.

On August 4, 1904, the *Balabac* left Baler in search of the sloop *San Luis*, which had put to sea with Lieutenant Metcalfe, Philippine Scouts, several scouts and a crew of four men. She found the sloop about noon 30 miles off Casiguran in a helpless condition, gradually breaking up and the occupants without food or water. Although a strong gale was blowing everyone on the sloop was taken aboard the *Balabac*, and the sloop itself towed to Baler.

PALAWAN.

[Capt. William de C. Wetherell.]

The *Palawan* was on special duty at Manila from July 1, 1904, to January 28, 1905, during which time she made five trips over regular routes, as follows:

In July, 1904, she made one trip over route No. 4; in September, 1904, one trip over route No. 5; in October, 1904, one trip over route No. 10; in December, 1904, one trip over route No. 1; and in January, 1905, one trip over route No. 10. She also made a trip for the governor of Romblón, leaving Manila on November 24 and returning on December 4, 1904.

On the 18th of November, 1904, while at Puerto Princesa, it was reported to the captain that the customs launch *Scoter* was on a reef off Tagalingan Island. The *Palawan* left at once and found the *Scoter* in a very precarious position, exposed to the full strength of the northeast monsoon. The *Palawan* placed part of her crew on board the *Scoter*, and succeeded in getting her off.

On February 28, 1905, the *Palawan* left Zamboanga at the request of the customs collector in search of a coal lighter belonging to the civil government, which had broken adrift with two natives aboard. The lighter was picked up about 3 miles west of Caldera Bay and towed back into port.

On March 15, 1905, the *Palawan* towed the launch *Baltimore* from Davao to Cotabato at request of Major Stanton, chief quartermaster.

BASILAN.

[Capt. Thomas Hillgrove.]

The cutter *Basilan* was on special duty at Manila from July 1 to September 15, 1904, during which time she made two trips over regular routes—one trip in July over route No. 1 and one trip in September over route No. 2.

On September 15, 1904, she was placed on route No. 1, and remained there until November 30, 1904, when she returned to Manila and was placed on special duty here.

On February 9, 1905, the *Basilan* was relieved from special duty at Manila and placed on route No. 10, remaining there until March 30, 1905, when she again returned to special duty at Manila.

April 17, 1905, she was assigned to duty with the constabulary operating in Samar and Leyte, where she is at present.

On July 27, 1904, this vessel made a trip to Dagupan with 60 tons of dynamite for the Benguet road.

TABLAS.

[Capt. James Miller.]

This cutter was on special duty with the customs authorities at Joló from July 1 until October 24, 1904, when it underwent repairs. It was then assigned to the constabulary, being relieved from that latter duty on January 6, 1905. In January, 1905, it returned to duty with the customs authorities at Joló, passing over routes Nos. 10 and 8 en route, and reporting for duty on February 1, 1905.

On July 24, 1904, a party of sailors, under the command of the first officer, and the coast district inspector, landed at Cagayán, Joló, in search of contraband. As the party approached the shore they were fired upon by a band of Moros; 3 of the sailors were wounded and the boat riddled with bullets. The *Tablas* returned immediately to Joló and reported the attack. There she embarked two companies of infantry and five officers, and returned to the scene of the attack. They discovered the Moros fortified in a cotta, and after a sharp fight the enemy fled, leaving 24 killed.

MINDANAO.

[Capt. A. R. Cahling.]

From July 1 to August 15, 1904, this cutter was engaged on route No. 8, and from August 15 to November 30, 1904, on route No. 10. In December, 1904, she made one trip on route No. 8 and one trip on route No. 10, arriving in Manila from the latter January 3, 1905.

On January 20 the *Mindanao* was designated for duty with the constabulary, with headquarters at Batangas.

On September 19, 1904, while cruising from Romblón to Calapan, the *Mindanao* sighted the barkentine *Paloma* flying distress signals, and upon examination found that her rudder was useless. The *Paloma* was taken in tow and left at Calapan.

MARINDUQUE.

[Capt. J. C. Henschlem.]

From July 1 until November 13, 1904, the *Marinduque* was engaged on route No. 6. On the latter date she returned to Manila for repairs.

On the 4th of January, 1905, the *Marinduque* sailed over route No. 2 for route No. 9, with headquarters at Cebú, arriving there January 9, 1905.

SÁMAR.

[Capt. Peter Olsen]

From July 7 until August 19, 1904, the *Sámar* was engaged on route No. 2. On the latter date she was relieved from route No. 2 and assigned to route No. 6, with headquarters at Cebú. (The number of this route was changed to No. 9 on September 1, 1904.) She continued on this route until January 9, 1905, when she returned to duty on route No. 2.

On July 30, 1904, while guard ship at Manila, the *Sámar* assisted the S. S. *Afghanistan*, which was thrown against the breakwater during the typhoon.

On February 5, 1905, while running between Tacloban and Surigao, the *Sámar* sighted two large steamers heavily laden. The *Sámar* signaled them to hoist their colors; one hoisted the German flag and the other ran away. Both were sailing northeast.

MINDORO.

[Capt. John G. Fels.]

From the beginning of the fiscal year until November 28, 1904, this vessel was engaged on route No. 3, being relieved from the same on the latter date.

The *Mindoro* made one trip over route No. 5 in December, 1904, and one trip over route No. 3 in January, 1905, returning to Manila from the latter named trip on February, 1905, from which date until April 12, 1905, she was on special duty at Manila.

On April 12, 1905, she was returned to duty on route No. 3, continuing on same until June 2, 1905, when she was again relieved and returned to duty at Manila.

LEYTE.

[Capt. Wm. N. Fisher.]

From the beginning of the year until November 5, 1904, this cutter was engaged on route No. 7. On November 5, 1904, she was placed on route No. 2, where she remained until December 18, when she was relieved from that route and assigned to duty with the constabulary operating in Sámar, from which duty she was relieved on April 26, 1905.

On May 25, 1905, the *Leyte* was assigned to duty on route No. 10, where she is at present.

PANAY.

[Capt. Wm. N. Murphey.]

From July 1 to November 30, 1905, this cutter was engaged on route No. 5, being relieved from that route on the latter date.

On December 6, 1905, she was assigned to duty on route No. 3, on which route she is at present.

On July 1, 1904, the *Panay* proceeded to Pandan, to the scene of the wreck of the *Scout*. Returned to Manila.

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On July 13, 1904, succored the launch *Petro*, belonging to Lizarraga Hermanos, which was weatherbound between Concepción and Iloilo off the Palbayan Island, having run short of coal during the typhoon that was blowing at that time. The *Panay* supplied her with 23 sacks of coal.

On September 1, 1904, while cruising between Cápiz and Manila, a lorchá was sighted flying distress signals. It was found that she was short of provisions. She was supplied with water and rice.

RANGER.

[Capt. C. H. Maddox.]

This launch was assigned to duty with the constabulary, with headquarters at Zamboanga, on July 27, 1904, and is still engaged upon that duty.

The *Ranger* has made one trip to Manila during this fiscal year, in April, 1905, for repairs.

ROVER.

[Capt. R. P. Doran.]

The *Rover* has been cooperating with the constabulary, with headquarters at Lucena, for the entire fiscal year.

This launch has made three trips to Manila during the fiscal year—one in October, 1904, one in February, 1905, and one in May, 1905—all for repairs. The occasion of the second trip was due to her propeller being lost, which necessitated her being towed to Manila, which was done by the *Romblón*.

The *Rover* was beached to save ship at the port of Bagamanok, south of the small island of Panay, and off the northeast coast of Cantanduares Island, on April 28, 1905, during a violent typhoon. She was successfully floated on May 7, 1905, and towed to Manila.

TROY.

[Capt. D. A. Maloney.]

From July 1 to December 30, 1904, this launch was on duty with the constabulary, with headquarters at Zamboanga.

During this tour of duty, in October, 1904, her low pressure shaft broke, which necessitated her being towed to Manila. This duty was performed by the *Tablas*.

On January 1, 1905, she was assigned to duty with the constabulary operating in Sámar, with headquarters at Dolores River.

CABRA (LEADER).

[Capt. D. M. Thomson.]

In January this launch was undergoing repairs for assignment to the constabulary. In February her name was changed from *Leader* to *Cabra*, and she was assigned to duty with the constabulary operating in Sámar, with headquarters at Oras.

PHILADELPHIA.

[Capt. Francisco Such, sr.]

This launch was taken over by the bureau of coast guard and transportation on March 24, 1905, and assigned to duty with the governor of Paragua, upon which duty she remained until June 3, 1905.

From June 6 to 21, 1905, the *Philadelphia* was operating under the governor of Bacolod.

On June 29, 1905, she was assigned to and reported for duty with the constabulary, with headquarters at Iloilo, Panay, and under the direction of Colonel Taylor, P. C.

CUYO.

[Patron Quintino Menoza.]

Engaged in general work on Pasig River and in Manila Bay for entire fiscal year.

PEPE.

[Patron Damian Pedere.]

Engaged in general work on Pasig River and in Manila Bay for entire fiscal year.

TENDER.

[Patron Emeterio Alberto.]

Engaged in general work on Pasig River and in Manila Bay for entire fiscal year.

PASIG.

[Patron Segundo Seatco.]

From July 1, 1904, until March, 1905, this launch was operating under the immediate supervision of the inspector of machinery. It was relieved in March, 1905, by the launch *Igorrote*.

SUERTE.

[Patron Anselmo Marigsa.]

From the beginning of the fiscal year until December, 1904, this launch was assigned to and operating with the constabulary bureau, engaged in carrying troops and supplies in the Pasig River, Manila Bay, and Laguna de Bay. During the months of December, January, February, and part of March, she was undergoing repairs. On the 15th of March, 1905, she was again placed in commission, and assigned to the bureau for general work on the Pasig River and in Manila Bay.

GEORGE TILLY.

[Patron Pedro Febre.]

From July 1 to December 31, 1904, engaged in general work on Pasig River and in Manila Bay. January 1, 1905, assigned to duty with constabulary bureau, from which duty she was relieved April 1, 1905, and returned to her former duty with this bureau.

BOHOL.

[Patron Petronillo Querubin.]

This launch was purchased by the marine superintendent in Hongkong, and arrived here November 28, 1901. Upon her arrival she was assigned to duty with the bay and river fleet, and has performed general work on the Pasig River and in Manila Bay since then.

IGORROTE.

[Patron Segundo Seatco.]

In March, 1905, this launch, which was formerly the *George Curry*, a police launch, was taken over by this bureau and assigned to the inspector of machinery, relieving the launch *Pasig*.

SENTINEL.

[Capt. J. G. Mussen.]

The *Sentinel* was a stern-wheel boat detailed to duty on the Cagayán River with headquarters at Aparri. She continued on this duty from the beginning of the fiscal year until February 23, 1905, when she struck a submerged log in the vicinity of Alcalá and sank.

She was raised and taken to the Camalaniagan dock, where it was discovered that her condition did not warrant repairs. Her hull was sold and the machinery brought to Manila.

NOTE.—A number of tables showing the cost of maintenance of and work performed by the several coast-guard vessels have been omitted and are on file in the War Department.

Recapitulation coast guard fleet.

COST OF MAINTENANCE.

Pay.....	P 396,379.41
Subsistence.....	88,223.16
Coal invoiced, 10 per cent must be added.....	225,519.64
Supplies, 10 per cent must be added.....	131,133.35
Repairs to hull.....	66,760.06
Repairs to machinery.....	26,337.09
Pilotage and contingent expenses.....	6,608.40
Ordnance, 10 per cent must be added.....	39,847.17
Washing.....	3,104.14
Total, including insular purchasing agent, 10 per cent.....	1,023,562.44

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WORK PERFORMED.

Coal consumed.....	tons..	15,792.148
Total distance cruised.....	miles..	383,678
Ports visited.....		4,152
Passengers carried.....		31,401
Freight carried.....	tons..	6,070.1
Money carried.....		P 10,165,443.04
Mail carried.....	pouches..	4,971
	sacks.....	7,061

Passenger report, July 1, 1904, to June 30, 1905.

Bureau or province.	Passengers.		Revenue.
	First-class.	Third-class.	
Auditor department.....	3		P 112.00
Agricultural bureau.....	39	9	1,482.10
Architectural.....	2	17	214.00
Benguet road.....	6	534	9,284.00
Billibid prison.....	33	1,000	15,210.80
Coast and Geodetic Survey.....	9	1	190.20
Customs.....	149	30	8,202.20
Civil service bureau.....	3		83.00
Civil commission.....	12		176.00
Constabulary.....	962	5,346	69,044.16
Coast Guard, D. V.....	84	134	5,732.40
Coast Guard, L. H.....	13	84	1,514.60
Educational bureau.....	659	201	19,161.27
Engineering bureau.....	135	45	5,330.90
Ethnological survey.....	4		138.00
Executive bureau.....	156	74	5,769.58
Expositions.....	16	466	5,700.00
Forestry bureau.....	73	46	2,074.94
Health bureau.....	314	321	5,704.85
Internal revenue.....	15		447.80
Insular purchasing agent.....	2		62.00
Justice bureau.....	322	118	9,042.97
Mining bureau.....	1		24.00
Public lands.....	11	5	574.50
Posts.....	88	11	2,613.00
Treasury bureau.....	48	9	1,297.80
Weather bureau.....	3		125.00
United States Army.....	801	3,186	66,179.41
United States Navy.....	1		62.00
Leper colony.....	17	543	2,612.50
Abra Province.....	1		5.00
Albay Province.....	16	582	8,181.90
Ambos Camarines.....	4		138.00
Antique.....	12	9	421.40
Batangas.....	22	49	547.10
Bohol.....	4	1	89.80
Cotabato.....	7	4	227.20
Cápi.....	9	20	442.30
Cebu.....	91	119	2,688.60
Cagayán, Mindanao.....	101	71	1,172.36
Davao.....	15	13	532.00
Iloilo Province.....	8	140	1,694.00
Isabela.....	106	19	433.26
Ilocos Norte.....	14	17	413.20
Ilocos Sur.....	10	14	397.84
Infanta.....	1		22.50
Joló.....	14	3	811.80
Leyte.....	53	19	1,516.20
Laponto-Bontoc.....	3		59.00
Marinduque.....	2		7.00
Misamis, Mindanao.....	129	224	5,598.60
Mindoro.....	6	9	234.60
Moro.....	122	169	6,714.60
Masbate.....	20	13	673.61
Negros.....	40	31	881.10
Palawan.....	100	294	5,506.10
Príncipe.....	4	14	298.00
Polillo.....	1		22.50
Romblón.....	41	30	1,092.20
Sorsogón.....	6	68	842.15
Surigao.....	38	25	1,138.30
Samar.....	100	37	2,946.60
Tayabas.....	53	85	1,633.80
Unión.....	3	19	230.20
Zambales.....	4	10	124.00
Southern Philippine Steamship Co.....	1		21.00
Total.....	5,145	14,288	285,923.80
Paid passengers.....	51	102	3,286.90

Passenger report, July 1, 1904, to June 30, 1905—Continued.

Bureau or province.	Passengers.		Revenue.
	First-class.	Third-class.	
CHARTERED BOATS.			
Governor's party: Polillo, 15 days, at ₱ 225.....			₱ 3,375.00
Customs: Tablas, 155 days, at ₱ 225.....			34,875.00
Commission:			
Busuanga, 3 days, at ₱ 225.....			675.00
Negros, 9 days, at ₱ 225.....			2,025.00
Mindoro, 9 days, at ₱ 225.....			2,025.00
Balabac, 13 days, at ₱ 225.....			2,925.00
Polillo, 3 days, at ₱ 225.....			675.00
Palawan, 3 days, at ₱ 225.....			675.00
Samar, 9 days, at ₱ 225.....			2,025.00
Luzón, 2 days, at ₱ 225.....			450.00
Tablas, 5 days, at ₱ 225.....			1,125.00
Marinduque, 2 days, at ₱ 225.....			450.00
Rover, 1 day, at ₱ 112.50.....			112.50
			13,162.50
Constabulary:			
Negros, 168 days, at ₱ 225.....			37,800.00
Luzón, 19 days, at ₱ 225.....			4,275.00
Balabac, 163 days, at ₱ 225.....			36,675.00
Mindanao, 168 days, at ₱ 225.....			37,800.00
Tablas, 25 days, at ₱ 225.....			5,625.00
Leyte, 116 days, at ₱ 225.....			26,100.00
Basilan, 3 days, at ₱ 225.....			675.00
Busuanga, 63 days, at ₱ 225.....			14,175.00
Mindoro, 3 days, at ₱ 225.....			675.00
Ranger, 159 days, at ₱ 112.50.....			17,887.50
Rover, 336 days, at ₱ 112.50.....			37,800.00
Troy, 337 days, at ₱ 112.50.....			37,812.50
Cabra, 129 days, at ₱ 112.50.....			14,512.50
Philadelphia, 3 days, at ₱ 112.50.....			337.50
Ranger, 148 days, at ₱ 112.50.....			16,650.00
			288,900.00
Romblón Province: Palawan, 7 days, at ₱ 225.....			1,575.00
Palawan Province: Philadelphia, 60 days, at ₱ 112.50.....			6,750.00
Occidental Negros: Philadelphia, 19 days, at ₱ 112.50.....			2,137.50
Samar Province: Basilan, 74 days, at ₱ 225.....			16,650.00
Negros (wrecking Masbate), 55 days, at ₱ 225.....			12,375.00

Summary.

Passengers, government.....	₱ 285,923.80
Passengers paid fares.....	3,286.90
Chartered vessels.....	379,800.00
Total.....	669,010.70

REPORT OF BUREAU OF COAST GUARD AND TRANSPORTATION. 299

Freight report, July 1, 1904, to June 30, 1905.

Bureau or province.	Tons.	Pounds.	Freight.
Agricultural bureau.....	27	1,465	₱ 490.04
Architectural bureau.....	1	66	23.07
Bilibid prison.....	103	1,764	2,007.21
Commission.....		300	1.80
Coast and Geodetic Survey.....		450	2.25
Customs.....	47	563	723.68
Constabulary relief fund (Bohol).....	58	1,150	702.90
Constabulary.....	2,082	1,756	21,510.21
Coast Guard, D. V.....	145	1,624	1,734.05
Coast Guard, L. H.....	37	1,436	447.78
Educational bureau.....	147	1,256	2,183.31
Engineering bureau.....	3	1,063	53.29
Ethnological survey.....		50	1.00
Executive bureau.....	29	1,200	297.25
Forestry bureau.....	2	1,264	51.51
Health bureau.....	6	1,265	88.12
Internal revenue.....	1	452	16.00
Justice revenue.....		1,250	7.50
Insular purchasing agent.....	35	897	355.61
Laboratories.....		15	1.00
Mining bureau.....		485	3.14
Public lands.....	3	700	53.60
Posts.....	7	1,366	73.70
Treasury bureau.....		990	9.20
Weather bureau.....		160	3.00
United States Army.....	616	112	8,456.41
Leper colony.....	487	1,497	7,587.70
Albay Province.....	150	1,804	1,811.42
Antique Province.....	2	1,223	26.46
Batangas Province.....		882	4.41
Benguet Province.....	66	198	653.15
Bohol Province.....	30	787	309.13
Cagayán Province.....	6	42	65.46
Cápiz Province.....		1,420	7.67
Cebu Province.....	225	21	2,323.26
Cotabato Province.....	1	1,485	19.90
Dávao Province.....	6	1,740	68.33
Ilocos Norte Province.....	2	138	29.23
Iloilo Province.....	2	595	22.97
Isabela Province.....	1	385	14.00
Leyte Province.....	2	1,231	32.37
Lepanto-Bontoc Province.....	4	735	50.31
Marinduque Province.....		1,105	5.52
Masbate Province.....		1,518	10.00
Mindoro Province.....	3	536	38.76
Misamis Province.....		500	3.00
Moro Province.....	37	1,347	480.25
Negros Oriental Province.....		250	1.25
Paragua Province.....	43	818	720.21
Príncipe Province.....		100	1.00
Polillo Province.....		553	6.08
Romblón Province.....	11	1,874	120.91
Samar Province.....	10	200	109.53
Surigao Province.....		1,117	7.99
Sorsogón Province.....	1	1,626	18.12
Tayabas Province.....	46	1,308	508.39
Unión Province.....		507	7.50
Zambales Province.....	1	460	12.30
Total.....	4,490	1,089	54,353.21
Paid freight.....	51	1,603	1,066.13
Total.....	4,542	2,692	55,419.34

Report of money handled by coast-guard cutters, fiscal year 1905.

Bureau or province.	Amount.	Rate.	Freight charges.
		<i>Per cent.</i>	
Treasury, Philippine Islands.....	P 5,384,368.55	0.00½	P 13,460.92
Constabulary.....	1,103,616.12		2,759.04
Customs.....	23,372.27		58.43
Coast guard, light-house.....	4,940.16		12.35
Posts.....	800.00		2.00
Army, U. S.....	50,474.78		126.19
Navy, U. S.....	428.45		1.07
Agricultural bureau.....	234.00		1.00
Insular purchasing agent.....	2,000.00		5.00
Leper colony.....	21,000.00		52.50
Abra province.....	7,300.00		18.25
Albay.....	79,409.28		198.52
Antique.....	21,145.96		52.86
Batangas.....	161,250.00		403.13
Balabac.....	789.00		1.92
Bohol.....	147,019.34		367.54
Cagayan.....	267,976.01		669.94
Cápit.....	52,000.00		130.00
Cebu.....	1,394,168.72		3,485.42
Cotabato.....	14,664.01		36.66
Davao.....	27,116.95		67.79
Iloilo.....	88,946.12		222.30
Infanta.....	2,319.70		5.80
Isabela.....	56,674.50		141.69
Ilocos Norte.....	35,000.00		87.50
Ilocos Sur.....	9,000.00		22.50
Joló.....	16,356.20		40.89
Leyte.....	76,144.94		190.36
Maabate.....	24,293.41		60.73
Mindoro.....	25,296.81		63.24
Moro.....	392,185.20		955.46
Marinduque.....	15,400.00		38.50
Misamis.....	1,200.00		3.00
Negros.....	84,637.66		211.59
Palawan.....	21,961.80		54.90
Romblón.....	12,943.75		32.36
Surigao.....	15,298.48		38.25
Samar.....	334,563.33		836.40
Sorsogón.....	39,000.00		97.50
Tayabas.....	140,000.00		350.00
Unión.....	20,267.58		50.66
Total.....	10,165,443.04		25,413.60

The above does not include 4 boxes, 3 kegs pesos, and 5 boxes Mexican shipped by treasury bureau, amount not given.

Report of mail handled by bureau of coast guard and transportation, fiscal year 1905.

Pouches : 4,759 | Sacks 7,059

Recapitulation.

Passengers:	
Government.....	P 285,923.80
Paid fares.....	3,286.90
Chartered vessels.....	379,800.00
Freight:	
Government.....	54,353.21
Paid.....	1,066.13
Charges on money handled.....	25,467.08
Total earnings.....	749,843.64
Passengers carried.....	19,433
Freight carried..... tons.....	4,542½
Money carried.....	P 10,165,443.04
Mail carried.....	{pouches..... 4,759
	{sacks..... 7,059
Total passengers carried.....	31,401

REPORT OF BUREAU OF COAST GUARD AND TRANSPORTATION. 301

Passengers, regular routes.....	₱ 19, 433
Passengers, chartered vessels.....	11, 968
Total freight carried..... tons..	6, 180 ¹ / ₄ ¹ / ₈
Freight, regular routes..... do...	4, 542 ⁸ / ₁₆ ² / ₄
Freight, chartered vessels..... do...	1, 637 ¹ / ₄ ¹ / ₈
Total money carried.....	₱ 10, 165, 443. 04
Total mail.....	{pouches.. 4, 759
	{sacks.... 7, 059

No collections for passengers, freight, money, or charter have been made. The charges booked are based on commercial rates as nearly as could be gotten at. It is thought they are high, as a rule.

On the other hand, had the bureau of posts been charged a fair valuation per mile for carrying the mails, it is thought that the earnings of the vessels would have been materially increased.

Respectfully submitted.

FRANK P. HELM,
Marine Superintendent.

The CHIEF BUREAU OF COAST GUARD AND TRANSPORTATION,

Manila, P. I.

EXHIBIT 3.

ANNUAL REPORT PAYMASTER BUREAU COAST GUARD AND TRANSPORTATION.

Financial operations of the bureau of coast guard and transportation for the fiscal year ending June 30, 1905.

SALARIES AND WAGES.

Appropriated, Act No. 1225.....	₱ 80, 000. 00
Appropriated, Act No. 1361.....	5, 303. 34
	85, 303. 34
Disbursements.....	85, 243. 33
Balance.....	60. 01

CUTTERS AND LAUNCHES.

Appropriated, Act No. 1225.....	₱ 1, 140, 000. 00
Outside work (revenue from shop).....	46, 218. 40
	1, 186, 218. 40
Disbursements.....	1, 159, 342. 28
Balance.....	26, 876. 12

LIGHT-HOUSE MAINTENANCE.

Appropriated, Act No. 1225.....	₱ 380, 000. 00
Disbursements.....	378, 563. 38
Balance.....	1, 436. 62

CONTINGENT EXPENSES.

Appropriated, Act No. 1225.....	₱ 6, 400. 00
Disbursements.....	6, 049. 94
Balance.....	350. 06

IMPROVEMENT, ENGINEER ISLAND.

Appropriated, Act No. 1225.....	₱ 35,000.00
Disbursements.....	29,137.19
Balance.....	5,862.81

MARINE RAILWAY AND MACHINE SHOP.

Appropriated, Act No. 1225.....	₱ 295,000.00
Disbursements:	
Marine railway.....	₱ 228,509.13
Machine shop.....	62,795.89
	291,205.02
Balance.....	3,794.98

LIGHT-HOUSE CONSTRUCTION.

Balance July 1, 1904.....	₱ 169,855.47
Appropriated, Acts Nos. 1342 and 1243.....	278,000.00
	447,855.47
Disbursements.....	304,466.68
Balance.....	143,388.79
Collections from private freight and passengers to June 30, 1905.....	5,230.58

Revenue from shops.

Quartermaster department, U. S. Army.....	₱ 11,162.83
United States Navy.....	1,320.33
Quarantine service.....	964.65
Philippines constabulary.....	1,943.88
Bureau of coast guard and transportation (office furniture).....	719.95
Insular purchasing agent.....	150.84
Province of Mindoro.....	867.90
Bureau of forestry.....	3,973.38
Bureau of engineering.....	831.47
Bureau of architecture.....	64.43
Bureau of public printing.....	82.94
Coast and geodetic survey.....	623.62
Bilibid prison.....	39.60
Bureau of government laboratories.....	13.89
Bureau of customs.....	3,365.62
Bureau of posts.....	78.04
Manuel Earnshaw & Co.....	87.80
Police department.....	384.55
Malacañang palace.....	29.96
Bureau of agriculture.....	17.51
Light-house construction.....	6,973.87
Light-house maintenance.....	12,521.34
Total.....	46,218.40

Revenue from dock (use of dock only).

Bureau of customs:	
Launch <i>Scoter</i>	₱ 92.00
Launch <i>Sea Gull</i>	92.00
Launch <i>Harbor No. 2</i>	95.00
Launch <i>Harbor No. 3</i>	60.00
Do.....	50.00
	₱ 389.00
Constabulary:	
Launch <i>Antonio</i>	60.00
Scow.....	50.00
	110.00

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Police department:		
Launch <i>Buckey O'Neil</i>		P 80.00
Quarantine:		
Launch <i>Mercury</i>		40.00
Quartermaster department, U. S. Army:		
Launch <i>Memphis</i>	P 155.00	
Launch <i>Bangor</i>	124.00	
Launch <i>Marietta</i>	140.00	
Launch <i>Reilly</i>	165.00	
Launch <i>Indianapolis</i>	166.00	
Launch <i>Hercules</i>	140.00	
		880.00
United States Navy:		
U. S. S. <i>Piscataqua</i>		383.32
Total revenue (vessels other than those of the coast guard)		1,882.32

Shop repairs to coast-guard vessels.

	Amount.		Amount.
Luzón.....	P 794.47	Ranger.....	P 6,128.41
Negros.....	1,060.47	Sentinel.....	21.63
Mashate.....	1,027.02	Troy.....	92.30
Polillo.....	11,710.81	Cuyo.....	5,836.79
Palawan.....	836.53	Tilley.....	460.51
Balabac.....	1,872.74	Suerte.....	2,803.25
Basilan.....	1,627.93	Pasig.....	206.46
Tablas.....	720.22	Pepe.....	1,114.90
Busuanga.....	674.95	Tender.....	199.07
Marinduque.....	2,318.78	Cabra.....	5,013.33
Mindanao.....	1,473.45	Bohol.....	827.89
Samar.....	1,767.93	Philadelphia.....	82.60
Mindoro.....	1,286.90	Igorrote.....	454.60
Leyte.....	435.86		
Panay.....	735.64	Total.....	55,575.73
Rover.....	4,002.29		

Coast-guard vessels docked at Engineer Island (use of dock only).

	Lay days.		Lay days.
Class 1:		Class 3:	
Romblón.....	6	Ash scow.....	1
Mindanao.....	3	Tender.....	2
Basilan.....	0	Igorrote.....	5
Busuanga.....	0	Pede.....	5
Polillo.....	0	Light-house scow.....	1
Mindoro.....	0	Scow No. 1.....	1
Negros.....	1	Scow No. 3.....	2
Panay.....	0	Igorrote.....	4
Leyte.....	0	Pasig.....	7
Luzón.....	1	Total.....	28
Samar.....	1		
Corregidor.....	3	Class 4:	
Balabac.....	1	Suerte.....	5
Total.....	17	Class 5:	
Class 2:		Bohol.....	0
Pittsburg.....	3	Geo. Tilley.....	2
Leader.....	5	Cuyo.....	7
Picket.....	7	Total.....	9
Rover.....	8		
Ranger.....	3		
Picket.....	3		
Rover.....	7		
Total.....	36		

Estimated cost if vessels had been docked elsewhere.

Class 1:		
5,200 tons at 48 cents.....	P 2,496.00	
17 lay days at 10 cents.....	680.00	
		P 3,176.00
Class 2:		
Docking and undocking at P 100.....	700.00	
36 lay days at P 20 per day.....	720.00	
		1,420.00
Class 3:		
Docking and undocking at P 30.....	270.00	
28 lay days at P 10 per day.....	280.00	
		550.00
Class 4:		
Docking.....	40.00	
5 lay days at P 10.....	50.00	
		90.00
Class 5:		
Docking and undocking at P 50.....	150.00	
9 lay days at P 10 per day.....	90.00	
		240.00
Total.....		5,476.00

Respectfully submitted.

H. B. HATFIELD,

Paymaster, Bureau of Coast Guard and Transportation.

The CHIEF, BUREAU COAST GUARD AND TRANSPORTATION.

APPENDIX E.

ANNUAL REPORT OF THE BUREAU OF PRISONS.

MANILA, P. I., July 1, 1905.

SIR: I have the honor to submit herewith my annual report of the bureau of prisons for the fiscal year ending June 30, 1905:

Since the last annual report many changes have taken place in the work of the bureau, notably the expansion beyond the confines of Bilibid Prison—i. e., the establishment of a penal colony at Iuhuit, on the island of Palawan; a tuberculosis hospital on Calle Marques de Comillas in Manila; the transferring of the insane to the insane ward at San Lázaro hospital; placing prisoner working parties at Malahi Island, Albay Province, Overton-Lake Lanao and Fort William McKinley, besides sending prisoner working parties to Engineer Island and various portions of the city daily, all of which are clothed, rationed, and disciplined by this office, with the exception of the squad in the insane ward at San Lázaro, which is cared for by the board of health.

It is a matter of regret that the establishment of a reformatory, with a capacity of 2,000 juveniles of both sexes, at Camp Gregg, which includes 780 acres of land and a number of buildings, which was seriously under contemplation, could not have been accomplished. While it was not considered advisable to establish the reformatory during the period covered by this report, it is hoped that a decided movement in that direction will be authorized and the work at least started during the fiscal year 1906.

Preparations are under way for the establishment in the near future of a large rock quarry at Meycauyan for the purpose of quarrying stone for use at Bilibid Prison and for the various bureaus of the government.

A notable feature of the year's work is the interest that is manifested in the learning of trades by the prisoners in the manufacturing department, which has been so materially enlarged at Bilibid Prison during the year.

About 90 per cent of the prisoners are from the class of natives commonly called "taos," a large majority of whom are from the "bosque," without education, having had neither advantages nor opportunities to lift themselves above a more or less clouded mentality that allowed them no consciousness of possessing a mind of their own that they could exercise independent of the will of others, with the result that they fell into the hands of individuals possessed of a more or less remarkable degree of cunning, who led them to commit crimes by playing upon their ignorance to incite them to acts of violence for the sake of revenge for fancied wrongs or gain, or both. While it is probably not necessary to enter into further details regarding the former condition of these prisoners, it is with a considerable degree of satisfaction that I am able to state that almost without exception the prisoners of this class are soon built up physically and mentally by the treatment they receive along reformatory lines, and that they rapidly learn a trade, take up lines of independent thought, and, in fact, in a remarkably short time become fitted for citizenship to an extent that is more than gratifying.

It is a very noticeable fact to those in close touch with this line of work that there are no recidivists among this class of convicts, but that on being released they become good, industrious, law-abiding citizens, and in many instances are pointed to with pride by their neighbors as men who can and do work like Americans. They have no desire to return to their former unlawful pursuits, but are happy and contented with building a home and by their honesty and industry surrounding themselves and their families with the necessities that they formerly would have considered luxuries had they known or thought anything about such things.

Not only in the shops at Bilibid prison have the prisoners shown a readiness to work with a view to accomplishing something, but also at Iuhuit Settlement, where they have worked early and late without guards, getting out building material, erecting buildings, plowing, and planting. At road work in the provinces and at Fort William McKinley and at stone quarrying at Malahi Island they have also made a good showing in this particular. That the native can be and has been taught to perform good labor and enjoys doing so has been demonstrated beyond a doubt.

A very good proof of the wholesomeness of good, hard, interesting work for those in confinement was demonstrated on the 7th of last December. Two hundred of the "detention" prisoners confined in Bilibid Prison—so called on account of their having appealed from the decision of the lower court, their sentence consequently being held in abeyance until the decision of the higher court has been handed down, they in the meantime not being subject to hard labor and being confined in idleness—attempted an uprising, with the intention of killing the American guards and escaping, with the result that they were completely checked in seven minutes, with 19 killed and 40 wounded. Some 3,000 sentenced prisoners who are interested in working seven and a half hours each day quietly looked on and made not the slightest demonstration.

To avoid having idle prisoners of any description in confinement, it is earnestly recommended that the law be so changed as to provide that all prisoners shall be given work to perform. Idleness among prisoners certainly verifies the old saying, "Satan finds mischief for idle hands to do."

It is suggested that provision be made for the care of babes whose mothers are sentenced to imprisonment. Occasionally a mother with a babe in arms is received for imprisonment who has no relative or friend with whom to leave the child during her incarceration, in which case it has been the practice to allow the babe to remain with the mother.

A question worthy of consideration is whether or not, all things being equal, it would not be well to require that a convict must have learned one of the trades taught him during his confinement before his application for pardon will be considered by the executive. Such a requirement would tend to stimulate the convict to special exertions to equip himself with the means for gaining an honest livelihood on his release.

The number of prisoners and their distribution June 30, 1905, is as follows: Bilibid Prison, 3,131; Iuhuit Settlement, 239; Albay, 318; Overton, 453; Malahi Island, 125; Fort William McKinley, 373; San Lázaro Hospital, 55; Hospicio San José, 7; Luneta Station, 20; total, 4,721.

BILIBID PRISON.

POPULATION.

The prison population at the morning count on July 1, 1904, was 4,318 prisoners. During the fiscal year there were committed for imprisonment and returned from the working parties who had been transferred 5,435 prisoners, while 6,622 prisoners were released from confinement and transferred, leaving a total of 3,131 prisoners in confinement at Bilibid Prison and Hospital "B," bureau of prisons, on June 30, 1905, a decrease of about 27½ per cent. The daily average of prisoners in confinement for the year was 4,033.

The decrease as shown at the close of the fiscal year is due to the transfer of prisoners for work in the provinces, the establishment of Iuhuit Settlement, Palawan Island, the transfer of the insane, etc.

MAINTENANCE.

The gross cost of maintenance, which includes all expenditures for salaries and wages of the officers and employees of the prison (except those employed in connection with the manufacturing and sales department), consisting of subsistence, office and prisoners' supplies, illumination, burial expenses, donations, general repairs, and improvements, per capita for the year is ₱120.05, or ₱0.328 per capita daily. Deducting the amount that has been received and the amounts that are still due for maintenance and the profits on the receipts from the proceeds of the manufacturing department, the net cost per capita annually is ₱75.20, or ₱0.20½ per day, which is less than last year and considerably less than that of any like institution in the United States, as shown by their annual reports, as follows: Rhode Island, ₱709.68 gross, ₱476.30 net, per year; Michigan, ₱318.74 gross, ₱65.72 net, per year; Minnesota, ₱355.58 gross per year; and Virginia, ₱153.26 gross per year.

DISCIPLINE.

The completion of the new shops and the general activity in manufacturing and repairs has employed the minds of the prisoners and greatly aided in bettering the discipline. The fact that this office is endeavoring to secure positions for those whose good conduct during confinement and earnest and intelligent efforts at learning a trade enables them to be well recommended is a great encouragement to the prisoners to conduct themselves properly.

HEALTH.

Owing to the rapid increase in the population during the first half of the fiscal year and the crowded condition of the prison incident thereto, the health of the population was not what it would otherwise have been. The latter half of the year showed a marked improvement in this respect, owing to the withdrawal of prisoners from the prison for road work in the provinces.

In compliance with a recommendation of the resident physician regarding the inadequacy of the septic tanks in use and the necessity, in his opinion, of the installation of something more adequate in this respect, the matter was taken up with the board of health, with the result that the sanitary engineer of that bureau drew plans and specifications for an elaborate system that was submitted to this office by the commissioner of public health with his approval, recommending that steps be taken to carry out the plans submitted. The plans and specifications were submitted by the undersigned to the master mechanic of this bureau for an estimate of the cost of establishing the system outlined and also a report on the length of time it would require to install the system. At this date the master mechanic's report has not yet been received, but he expressed himself as of the opinion that the expense will be somewhere in the neighborhood of \$10,000. He also stated that so far as he had gone into the matter it seemed to him that owing to the very low, flat nature of the ground that it was a question whether or not this proposed plan could be carried out. As a matter of fact, the present septic tanks were installed here under the supervision of the sanitary engineer of the board of health in October, 1903, at which time there was a population exceeding the present population by nearly 300, and of course the accommodations in this respect are not nearly so greatly taxed as they were when the population was over 4,600. This recommendation, as well as all other recommendations of the resident physician, as contained in his report, attached hereto, to which attention is invited, will receive due attention.

One fact that must be borne in mind regarding the health of an institution of this character is that prisoners are being received at this prison daily and come from all parts of the archipelago. They in almost every case are in ill health, and it is very frequently the case that some of them die en route to this prison. A large percentage of these prisoners were in poor health when first taken into custody by the authorities, owing to their mode of living, scant clothing, irregular diet, etc. Their condition was probably not very much bettered after a term of confinement in the provincial jails, the result being that on their arrival they were far from being in good health, and some of them were almost ready for the grave. As a matter of fact, there is a very small percentage of prisoners received but what at the time of their arrival and for some little time afterwards present a most disgusting spectacle on close examination. It is very gratifying to be able to state that a great majority of these cases recover good health and become robust, so that they are able and willing to do good manual labor, and very naturally take on a pleasant and healthy frame of mind. The percentage of sick is about the same among the various tribes.

The capacity of the hospital, which is about 50 at the present time, will be increased to 150 by a rearrangement of the interior of the hospital, removing partitions that are no longer needed and extending one end of the hospital building.

Preparations are all ready for an extension of the accommodations at Hospital B (tuberculosis hospital) should conditions require them, the hospital at the present time having a capacity of 70, the proposed extensions allowing for an increase to a capacity of 200.

Preparations have been made to increase the sleeping accommodations at this prison, which will allow for more air space per prisoner. The changes necessary to allow for the additional sleeping quarters have been in progress since the passage of appropriation Act No. 1342.

MANUFACTURES.

The new shops' building was completed and occupied in April, allowing space for the wood-working machine shops, iron-working machine shops, hardwood-furniture shops, cabinetmaking shops, carpenter shops, and general repair shops, besides the steam laundry and the butcher shop, kitchen, and bakery. The removal of these shops to the new building allowed more space for the tailor shop, sea-grass-furniture shops, bamboo and bejuco furniture shops, tin shop, shoe and harness shop, paint shop, silversmith and carabao-horn curio shop, and sea-grass-plaiting shop. The carriage, wagon, and blacksmith shops have been somewhat enlarged, but still fail to meet the requirements. Arrangements have been made for inclosing within walls sufficient prison ground just outside the walls at present on which to erect buildings for the carriage, wagon, and blacksmith shops, paint shop, dry kiln, and boiler house.

Some of the new work that is being accomplished in the shops is the manufacture of carabao carts for use in the provinces and on the Benguet road, uniforms for the constabulary and the coast guard bureaus, the general repair of government property, the laundering of United States army transport laundry, and the construction of the new permanent improvements. On the completion of the dry kiln the hardwood furniture shops will be prepared to manufacture a full line of office, school, and household furniture, a complete line of which will be kept in stock for sale. The decided enlargement of the department has resulted in a corresponding increase in the sales.

A decided improvement in the style and workmanship of articles manufactured for sale has resulted from the increase in the force of skilled foremen employed, which allows a more thorough training of the prisoners in the shops.

IMPROVEMENTS AND REPAIRS.

Improvements during the last year have consisted of the completion of the new shops' building, installation of machinery, commencement of work of replacing the wall towers, being used temporarily, with permanent ones; the commencement of the work of connecting the prison with the warehouse by an iron cage; elevating the grade south of the prison wall; completing ventilations on pavilion roofs and gate house; completing one stone pavilion, work on which had been commenced the previous year, and building one stone pavilion entirely; repairs and extensions to hospital; erection of a temporary dry kiln; tarring and graveling roofs of new shops and new pavilion; commencing the building of a fireproof vault for the storage of records and valuables; new gratings and grate doors at entrance to guards' quarters and armory; installation of electric power and wiring for the new electric-light system; remodeling interior of building formerly used for shops, in order to utilize same as a sleeping pavilion; repairing and remodeling old kitchen and bakery building for the use of the shops; replacing old and insufficiently large water pipe with larger size; replacing stone blocks with wooden block pavement at driveway at entrance to prison; establishing six additional bathing stations; laying cement floors at the food-issue stations; rebuilding two latrines and laying cement floors; completing the large warehouse building; building sheds for the storage of lumber; installing a complete central telephone system between the guards' towers, yards, shops, offices, warehouses, hospitals, and quarters.

Arrangements have been made for the sinking of an artesian well, which will be a much-needed improvement, as the present water supply has been scarcely sufficient at all times, the force being inadequate.

One hundred thousand pesos have been appropriated, Act No. 1342, for the erection of permanent improvements at Bilibid Prison as follows: "Stone pavilion, warehouse, carriage and blacksmith shop, lumber shed, boiler house and dry kiln, stone wall surrounding said buildings, necessary grading for the foundations of said buildings, and for buildings and equipment for a stone quarry at site to be selected."

RECOMMENDATIONS.

That arrangements be made at some other institution for the care of infants brought to the prison by parents under sentence.

That arrangements be made whereby a female prisoner brought to the prison, who is about to become a mother, be cared for at some hospital until after the birth of the child.

Among other things, it is desired to erect a building suitable for school and chapel purposes, on a part of the ground that is recommended to be turned over to this prison earlier in this report.

Amounts earned by prisoners for which no authority for charge has been made.

Albay, 60,000 days, at ₱1 per day.....	₱60,000.00
Fort William McKinley, 28,111 days, at ₱1 per day.....	28,111.00
Engineer Island, 17,350 days, at ₱1 per day.....	17,350.00
Luneta police station and city wall, 26,000 days, at ₱1 per day.....	26,000.00
Camp Overton, 58,000 days, at ₱1 per day.....	58,000.00
Malahi Island, 43,350 days, at ₱1 per day.....	43,350.00
Iuhuit Settlement, 45,000 days, at ₱1 per day.....	45,000.00
Bilibid Prison and Hospital B. (The estimated number of prisoners at work exclusively for the bureau of prisons from June 30, 1904, to July 1, 1905, including carpenters, bakers, cooks, butchers, cloth weavers, masons, painters, whitewashers, machinists, plumbers, laundrymen, tailors, hospital nurses, tanners, barbers, messengers, sweepers, scrubbers, stock keepers' assistants, foremen, firemen, photographers, etc.), 1,000 per day for 310 days, at ₱1 per day.....	
	310,000.00
Total.....	587,811.00
Stock of manufactured articles on hand for sale.....	55,000.00

IUHUIT PENAL SETTLEMENT.

In November, 1904, a committee consisting of Mr. George N. Wolfe, warden of Bilibid Prison; Prof. William S. Lyon, horticulturist, bureau of agriculture, and Dr. Arlington Pond, of the board of health, in compliance with an executive order, proceeded to Puerto Princesa for the purpose of selecting a site in that vicinity for a penal colony. The site recommended and selected by the commission is a very fertile tract of land 10 miles long

by 5 miles wide, surrounded on the north, west, and south by mountains, and on the east by water, the Iuhuit River, with several forks, branching off and winding through a large part of this tract.

There were two objects in establishing a settlement, one of which was to provide a place where prisoners who had been serving long terms and were about to be liberated, as well as those who were about ready to be recommended for pardon, could be sent to receive a training for the duties and responsibilities of good citizenship, it being the desire to first train them in the simpler duties of gardening and farming, caring for cattle, handling agricultural implements, building the proper houses, and understanding the necessity for sanitary surroundings, after which it was the intention to allot a parcel of land on which they could build themselves a home, and on which they could raise sufficient crops with which to support themselves and their families.

The second consideration was to provide a place that would permit of transferring the class of prisoners mentioned from Bilibid Prison, thereby relieving the congestion at Bilibid.

Since its establishment 313 prisoners have been sent to the settlement, 45 having died, 21 released, and 8 returned to Bilibid Prison, the total at the settlement this date being 239.

The first work of the settlement consisted of erecting necessary buildings, the material being secured from the swamps and forests on the reservation.

The soil is adapted to the growth of cocoanuts, cacao, coffee, hemp, sugar cane, upland rice, tobacco, jute, and in fact nearly everything that can be grown in the Philippine Islands. Aside from the buildings that have been erected (some 13 in number), several boats, fish traps, etc., there has been a great deal of clearing done, and about 30 acres placed under cultivation, garden truck being planted thereon.

Arrangements have been made for commencing plantation work, all of which is proving very interesting to the members of the settlement. It is believed that the results of the work at the settlement will prove very satisfactory from every point in view, the population ranging as high, probably, as the two thousand mark.

The health of the settlement was not so good at first on account of the necessity for sending men into the swamps for nipa, bejuco, etc. While there they were bitten by mosquitos, with the result that there was considerable malaria in the settlement. Besides this, there was also some beriberi, but these conditions have changed so that there are very few in hospital, most of whom are old and decrepit.

It is recommended that arrangements be made for the removal within a given time of the few families that are living on the reservation, and a settlement made with them covering such removal.

ALBAY.

In order to relieve the crowded condition in Bilibid Prison, 500 prisoners were sent to Albay Province for work on the Tabaco-Ligao road. Sixty of this number died, 175 were returned, and 325 prisoners still remain at work on the road. The prisoners are guarded by scout organizations, and their work is superintended by the bureau of engineering, supplies being furnished from Bilibid Prison.

The prisoners have shown remarkable enthusiasm in their work, and have conducted themselves well, with one exception, when an attempt at escape was made. Forty-two were successful in making their escape, 2 being killed, and 2 wounded. The entire number who escaped were captured and returned to Bilibid Prison.

The cost of rationing prisoners at work on roads in the provinces being considerably more than the cost of feeding them at Bilibid Prison, the road fund, through the bureau of engineering, is charged with the difference in cost.

It is respectfully recommended that if the original number of prisoners (500) can be used to advantage on the road work in Albay, that the working party be kept up to that number.

OVERTON.

Of the 600 prisoners sent to Overton for work on the Iligan-Lake Lanao road, 34 died, 5 escaped, and 82 were returned to Bilibid Prison, leaving 478 prisoners still remaining at work on the road.

An attempt at escape was made in April, 5 being successful, and 1 being killed.

The Moro Province agreed to relieve the bureau of prisons of the expense of maintaining the prisoners at work on the Iligan-Lake Lanao road, but owing to the difficulty in securing supplies in the local market, desired the bureau of prisons to furnish the supplies, the expense for which would be reimbursed this bureau.

It is respectfully recommended that if the original number of prisoners (600) can be used to advantage on the Iligan-Lake Lanao road, that the working party be kept up to that number.

MALABI ISLAND.

The military authorities, desiring the use of the native prisoner labor for the purpose of quarrying stone at the Malahi Island military prison, 50 military prisoners were transferred from this prison to the military authorities at Malahi Island permanently and 156 civil prisoners were transferred temporarily for such work, 125 of this number being returned to Bilibid Prison and 31 still remaining.

An attempt at escape was made by the military prisoners, 3 of whom were killed, 20 captured, and 2 still at large. The civil prisoners also attempted to escape, 2 being killed, 7 captured, and 2 still at large.

Since a large percentage of the civil prisoners have been returned to this prison in a bad condition, and in view of the fact that the cost of maintenance is very much greater, it is recommended that all civil prisoners at Malahi Island be returned to Bilibid Prison.

FORT WILLIAM M'KINLEY.

In April, 1905, 450 prisoners were turned over to the military authorities temporarily for work at the new fort. These prisoners have been stockaded on the reservation of the fort and have performed very satisfactory work, but, owing to the near approach of the rainy season, the military authorities have intimated that these prisoners will soon be returned to Bilibid Prison. Seventy-three of this number have already been returned to Bilibid Prison, 3 have died, and 1 was transferred to Laguna Province, leaving a balance of 373 prisoners remaining at Fort William McKinley.

SAN LÁZARO HOSPITAL.

Arrangements having been made in December, 1904, for the care of insane prisoners at San Lázaro Hospital the insane prisoners who were being cared for at Bilibid Prison were transferred to that hospital.

The relief from the care of insane prisoners at Bilibid Prison has been very much appreciated, as it was a very patent fact that proper accommodations for the insane could not be provided for at the prison. The total number transferred to San Lázaro Hospital is 55; died, 1.

HOSPICIO SAN JOSÉ.

It has been necessary from time to time to request authority to transfer criminals suffering with certain maladies from Bilibid Prison to Hospicio San José, 7 such prisoners being confined there at present.

LUNETTA STATION.

At the request of the chief of the municipal police authority was granted for the warden to transfer 50 prisoners to Luneta Station as laborers about the station.

Thirty-three of these prisoners have been returned to Bilibid Prison, 3 of this number having escaped and were captured, leaving a balance of 17 prisoners remaining at the station.

STATISTICS.

Attached hereto are the tabulated statistics of all reports pertaining to prisoners in charge of this bureau, to which attention is invited. Attention is also invited to the reports of the resident physician and the chaplains and the cashier's statistics.

Before closing my report I desire to express my appreciation of the earnest and painstaking assistance of the members of the staff of this bureau, who have given undoubted evidence of their efficiency and loyalty.

I also desire to express my gratitude to the members of the Commission and to you, sir, especially, for the generous support that I have received, without which it would have been impossible to have accomplished what has been done in the past year.

Respectfully submitted.

GEO. N. WOLFE, Warden.

The SECRETARY OF COMMERCE AND POLICE,
Manila, P. I.



THE PRISON BAND "SOUNDING OFF" AT RETREAT, BILIBID PRISON.

1. 1. 1.

2. 2. 2.

3. 3. 3.

4. 4. 4.

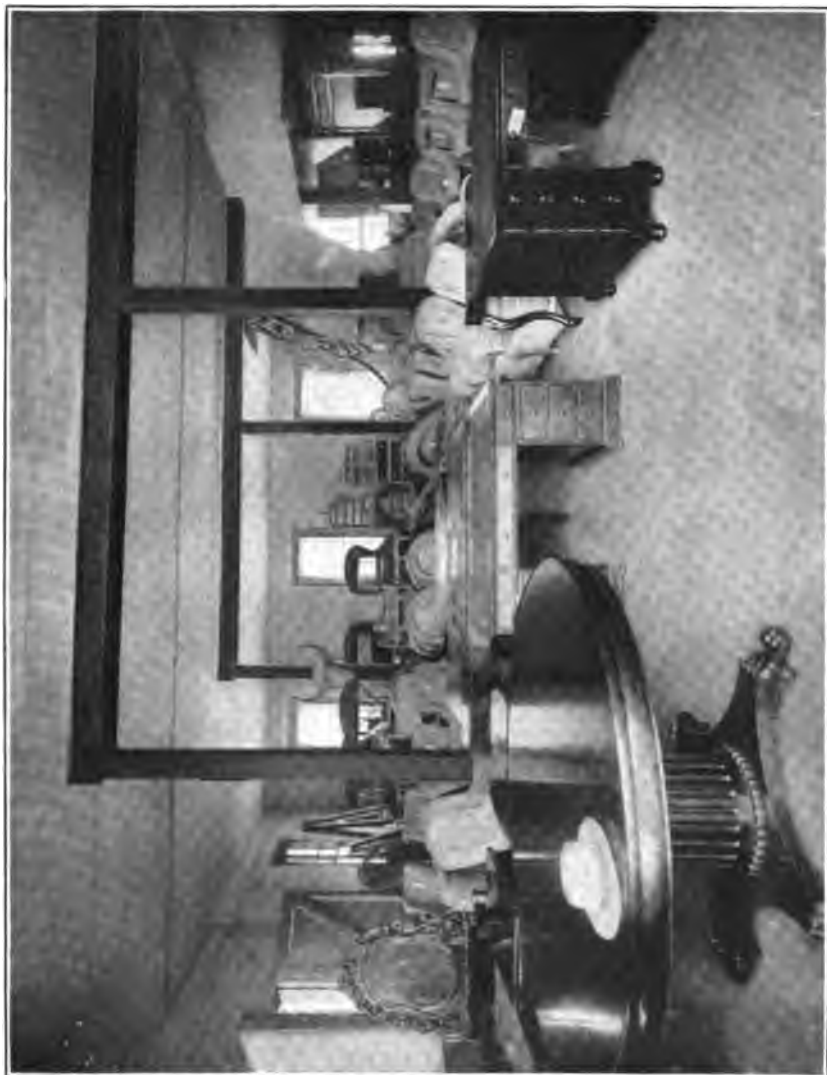


A PART OF THE TAILOR SHOPS, BILIBID PRISON.

1

1

1



A SECTION OF THE SALES ROOM, BILIBID PRISON.

REPORT OF THE RESIDENT PHYSICIAN.

MANILA, P. I., June 30, 1905.

SIR: I have the honor to submit herewith the annual report of the medical department of Bilibid Prison for the twelve months period beginning July 1, 1904, and ending June 30, 1905.

The total number of prisoners incarcerated during the year was 9,753. Two thousand and sixty-nine of these prisoners were transferred to the various road camps in the provinces, where 163 of them died during the year.

Of the 7,684 prisoners retained in Bilibid Prison during the year, 373 died. The mortality rate among the total number of prisoners incarcerated during the year was 5.4 per cent; that among the prisoners retained in this institution being 4.8 per cent, while that occurring among the prisoners transferred to the provinces was 7.8 per cent, a rate of mortality rarely seen outside of that occurring among a population infected with some one of the major epidemic diseases.

During the year 33,714 prisoners reported at the hospital for treatment. Of this number 1,885 were regularly admitted to the hospital for diseases and injuries of a serious nature, 373 died, and 1,512 recovered. Eight thousand three hundred and seventy-two visits were made at morning sick call, and 23,457 visits were made to the clinical ward of the hospital for treatment of diseases of the eye, ear, nose and throat, skin, and genito-urinary system, and diseases and injuries of a minor surgical nature. These prisoners were immediately sent back to work upon completion of their treatment, losing, on an average, an hour per day until cured. The average number of days that each prisoner reported for treatment was five. The average number of days of illness among patients in the hospital, exclusive of tuberculosis, was twelve.

The general health conditions of the prison showed a marked improvement during the latter half of the year, owing to the withdrawal of prisoners from the institution for road construction in the southern islands. Although this feature has materially reduced the number of men to a brigade building there still exists a decided condition of overcrowding in the prison. The total air capacity of the sleeping quarters of the prison is at present 879,106 cubic feet, while the average daily number of prisoners confined in the prison during the year was 4,033, thus allowing 217 cubic feet of air space per man. This figure is so far below the requirements of a hygienic dormitory that the undersigned wishes to lay especial stress upon the necessity of very materially increasing the air capacity of the sleeping quarters of the prison. At present, allowing 300 cubic feet of air space per man (the very lowest figure consistent with the nonincrease of the sick and death rate), there is room for but 2,930 men in the prison (see annual report of medical department for 1903 and 1904). While, if the general health of the prison is to be raised, it will require an increase of the per capita air space to at least 400 cubic feet, thus accommodating 2,197 men in the prison. The additional air space furnished by the dormitories that are to be erected in the southeast and southwest corners of the prison, in addition to that furnished by the building now used as a tailor shop, in all 356,376 cubic feet, will bring the total air capacity of the sleeping quarters of the prison up to 1,235,482 cubic feet, which, allowing 400 cubic feet per prisoner, will admit of the accommodation of 3,880 prisoners in the prison.

The allowance of 400 cubic feet per capita is based upon the fact that the dormitories are long, narrow buildings, having open windows placed 4 feet apart and reaching from the floor to the roof, thus allowing of the free and unobstructed access of air from side to side, as well as upward through the ventilators. This estimate, allowing 4 feet of bed space per man, seems to be ample, considering the free ventilation of the building.

A point having a direct bearing upon this subject is the prevalence of lobar pneumonia and pulmonary tuberculosis among the prisoners. During the fiscal year 1903 and 1904 there were 105 cases of pulmonary tuberculosis and 220 cases of lobar pneumonia, the daily average number of men confined in the prison being 3,735, while during the past year, 1904 and 1905, although the daily average number of men confined in the prison was increased by but 298 prisoners, the number of cases of pulmonary tuberculosis increased over 100 per cent, the number being 255, while pneumonia increased from 220 to 256. This increase of tuberculosis is so marked and alarming as to warrant the utmost dispatch in alleviating the overcrowding in the prison. At the present rate of increase in the number of cases of tuberculosis, and despite the fact that the cases are isolated and sent to Hospital B at the very earliest possible moment, the prison population, if not added to from time to time, would be depleted in an alarmingly short time.

Another point that the undersigned wishes to lay especial stress upon is the necessity of providing modern plumbing and sanitary accommodations for the disposal of excreta in the brigade buildings. The use of wooden tubs, open to the air, and polluting the same with unhealthy and noxious odors, is an added unfavorable factor and menace to the prison.

It is most respectfully recommended that the suggestions embodied in a former report upon this subject to the warden, providing for modern latrines and septic tanks situated at a proper distance from the prison, be carried out at as early a date as possible.

The undersigned again feels it his duty to recommend that a larger and more suitable hospital building be erected to provide for the proper accommodation of the large number of sick in the prison. The present structure is so small and inadequate that some of the patients are of necessity placed on the floor, there not being room in some of the wards for beds. As nearly as can be estimated from the present sick rate, a hospital building providing for 150 beds would seem to be required.

The work of the department has increased to such a magnitude that it is imperatively necessary for the good of the service that more skilled help be provided for. At present there are but 2 American hospital attendants—1 for Hospital A and 1 for Hospital B—an American dispensing clerk, and 2 native hospital stewards. The character of the work at Hospital B makes it impossible to get along with but one man on duty at a time, but as there is no one to relieve him when his tour of duty is ended, it works an injustice to the service, as well as to the attendant, to require him to stay on duty continuously as at present, except when relieved by some one from Hospital A, to the detriment of the service there. On the other hand, the character and amount of the work at Hospital A requires the constant attention of skilled help, and as over two years' experience with native hospital stewards has positively demonstrated their inefficiency and unreliability, it is manifestly impossible to expect one American hospital attendant to perform the required work with credit to himself and justice to the service. It is therefore respectfully recommended that the 2 native hospital stewards be done away with, and that 3 American attendants be supplied in their stead. This will then require only the regular service hours of the attendants and materially improve the service.

The establishing of a separate institution for the treatment of pulmonary tuberculosis, known as Hospital B, upon the south bank of the Pasig River, just east of the Ayala bridge, has been productive of the most gratifying results. Whereas, in the past, 80 per cent of the patients died, to-day the records of the institution show that only 55 per cent of the prisoners who are clinically and microscopically proven to be infected with tuberculosis die from that disease. These cases, of necessity, include all stages of the disease, from those just beginning to cough and lose flesh to those so emaciated as to represent the lowest possible degree of physical existence. From the results obtained since the opening of this department of the hospital proper, the undersigned wishes to report that, almost without exception, prisoners entering the hospital not later than the first stage of the disease recover their normal weight and strength inside of four months, their sputum then being free from tubercle bacilli. Of those entering the hospital during the second and third stages of the disease only a small percentage react to treatment.

Attached hereto is a tabulated report of the work at Hospital A and Hospital B and those reports of the road camps in the southern islands as are at present at hand.

Very respectfully,

WM. R. MOULDEN, *Resident Physician.*

THE WARDEN OF BILIBID PRISON,
Manila, P. I.

REPORTS OF THE CHAPLAINS.

MANILA, P. I., June 30, 1905.

SIR: I have the honor to submit herewith a report on religious functions that took place at this prison, during the fiscal year ending June 30, 1905, under my direction.

Religious confessions.....	407
Confessions of the sick.....	181
Confession of the condemned.....	1
Benedictions.....	208
Visits to the sick.....	108
Baptisms.....	3
Church services.....	70
Sermons, or instructions.....	48

Respectfully submitted.

EZEQUIEL RIVERA, *Chaplain.*

THE WARDEN OF BILIBID PRISON,
Manila, P. I.

MANILA, P. I., June 30, 1905.

SIR: I have the honor to submit the following report, relative to religious functions taking place in this prison during the fiscal year ending June 30, 1905.

Confessions made by the sick.....	110
Religious confessions.....	20
Death-bed confessions.....	10
Marriages.....	1
Visits to the carcel.....	60
Religious services on Sundays and Catholic holidays.....	65

Respectfully submitted.

CORNELIO TRINIDAD, Chaplain.

The WARDEN OF BILIBID PRISON,
Manila, P. I.

TABULATED STATEMENTS SHOWING MOVEMENTS IN PRISON POPULATION RELATIVE TO CRIMES
COMMITTED, COURTS, AGES, OCCUPATIONS, ETC.

TABLE NO. I.—Daily count of prisoners during fiscal year ending June 30, 1905 (evening count).

	1904.						1905.					
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1.....	4,321	4,309	4,482	4,481	4,535	4,426	4,411	4,432	4,056	3,540	2,964	3,081
2.....	4,314	4,308	4,485	4,472	4,471	4,424	4,403	4,425	3,977	3,534	2,979	3,114
3.....	4,308	4,315	4,483	4,466	4,473	4,415	4,402	4,429	3,724	3,549	2,973	3,194
4.....	4,287	4,321	4,482	4,463	4,473	4,406	4,411	4,425	3,758	3,530	2,979	3,188
5.....	4,289	4,308	4,503	4,461	4,473	4,476	4,412	4,445	3,755	3,531	2,979	3,193
6.....	4,280	4,312	4,490	4,477	4,471	4,472	4,413	4,443	3,824	3,527	2,978	3,190
7.....	4,276	4,299	4,488	4,476	4,466	4,454	4,508	4,436	3,681	3,376	2,975	3,178
8.....	4,281	4,306	4,499	4,475	4,476	4,452	4,505	4,429	3,683	3,376	2,979	3,182
9.....	4,268	4,309	4,492	4,463	4,472	4,455	4,507	4,450	3,684	3,369	2,965	3,175
10.....	4,289	4,331	4,494	4,460	4,467	4,471	4,504	4,447	3,691	3,267	2,965	3,171
11.....	4,285	4,335	4,513	4,476	4,499	4,486	4,510	4,449	3,590	3,261	3,001	3,167
12.....	4,262	4,324	4,522	4,486	4,492	4,480	4,508	4,446	3,585	3,162	3,018	3,176
13.....	4,271	4,318	4,518	4,487	4,460	4,489	4,482	4,450	3,584	3,170	3,012	3,163
14.....	4,273	4,309	4,510	4,482	4,458	4,491	4,488	4,463	3,584	3,171	3,012	3,138
15.....	4,271	4,327	4,508	4,485	4,451	4,487	4,483	4,456	3,580	3,031	3,017	3,137
16.....	4,253	4,335	4,505	4,478	4,398	4,495	4,488	4,469	3,584	3,025	3,018	3,134
17.....	4,246	4,346	4,497	4,489	4,393	4,484	4,474	4,461	3,590	3,040	3,014	3,131
18.....	4,247	4,353	4,495	4,485	4,390	4,478	4,573	4,466	3,590	3,024	3,007	3,122
19.....	4,258	4,343	4,514	4,506	4,391	4,467	4,571	4,463	3,574	3,018	3,008	3,124
20.....	4,249	4,345	4,520	4,573	4,381	4,472	4,571	4,513	3,578	3,013	3,051	3,139
21.....	4,249	4,352	4,516	4,591	4,395	4,472	4,572	4,511	3,570	3,095	3,046	3,141
22.....	4,254	4,364	4,515	4,594	4,383	4,469	4,563	4,495	3,574	3,098	3,062	3,141
23.....	4,273	4,374	4,504	4,594	4,381	4,470	4,459	4,498	3,577	3,088	3,045	3,144
24.....	4,261	4,444	4,509	4,602	4,379	4,464	4,454	4,417	3,564	3,089	3,049	3,068
25.....	4,281	4,448	4,523	4,590	4,383	4,434	4,407	4,261	3,566	3,080	3,045	3,063
26.....	4,272	4,449	4,526	4,596	4,406	4,432	4,414	4,257	3,561	2,985	3,056	3,134
27.....	4,293	4,459	4,497	4,593	4,400	4,439	4,416	4,268	3,565	2,978	3,066	3,137
28.....	4,300	4,452	4,500	4,540	4,400	4,438	4,419	4,028	3,560	2,977	3,061	3,138
29.....	4,303	4,469	4,497	4,542	4,398	4,430	4,450	.....	3,559	2,977	3,064	3,131
30.....	4,308	4,473	4,488	4,538	4,418	4,423	4,447	.....	3,540	2,973	3,060	3,131
31.....	4,306	4,476	.....	4,532	.....	4,419	4,440	.....	3,538	.....	3,073	.....
Average..	4,278	4,361	4,503	4,482	4,434	4,457	4,473	4,419	3,640	3,195	3,018	3,146

Daily average for the year, 4,033.

TABLE II.—Sex and changes in prison population during fiscal year ending June 30, 1905 (morning count).

Month.	Commitments.		Returned from transfer.						Dropped from prison records.						
	Male.	Female.	Police station.	Malabul Island.	I. S., Paragua.	Fort Wm. McKinley.	Albay.	C. O., Mindanao.	Total.	Expiration of sentence.	Payment of fine.	Satisfaction of fine and sentence.	Released on bond.	Cases dismissed.	Pardoned.
July.....	364	40							404	192	62		3	16	
August.....	446	40							514	177	53	2	7	3	
September.....	422	34							456	221	81	1	6	9	
October.....	435	29							461	173	46	1	4	6	1
November.....	321	37		4					358	182	37	6	9	11	1
December.....	367	20		16					387	167	22	2	5	15	
January.....	464	31	2	10					515	146	11	2	9	21	1
February.....	437	13	5	6	4		2		450	153	12	1	5	14	
March.....	557	20	19	2			5		577	181	20	4	10	15	
April.....	393	18				4		82	411	129	14	7	35	28	
May.....	434	19		8		32	40		453	125	19	3	11	33	
June.....	431	18	4	6	4	38	68		449	160	23	9	4	33	
Total.....	5,113	322	30	52	8	74	115	82	5,435	2,006	430	36	108	194	3

Month.	Dropped from prison records—Continued.																				
	Transferred to—														Died at—		Total.				
	Courts.	Sentenced prisoner.	Detained prisoner.	Police station.	Malabul Island.	I. S., Paragua.	Albay.	C. O., Mindanao.	Fort Wm. McKinley.	Hospicio San Jose.	Zamboanga Jail.	San Lazaro Hospital.	A. I., California.	Bilibid prison.	Hospital B.	Remission of fine or unexecuted portion of sentence.	Escapes.	Deported.	Male.	Female.	Grand total.
July.	13	33	10						7			3	17		54		6		394	22	416
August.	5	25	5										20		31				309	35	344
September.	12	31	11										37		34		1		413	31	444
October.	12	19	5		100							1	42		7				395	22	417
November.	5	26	7		51	61						31	31		9	3	2		427	45	472
December.	18	23	8									12	53		16	43	2		363	23	386
January.	17	35	9	25	47	100						6	17		14	26	1	7	461	33	494
February.	8	84	7		5			250	250			3	5		15	15	32	2	835	27	862
March.	17	136	46	25	3	52	250	250				13	16		26	2	1	1,039	28	1,067	
April.	12	68	16			100		100	450				6		5	2		4	953	23	976
May.	3	134	3										1		14	6	5	6	338	15	353
June.	12	33	4							52		2		21	11	10		17	378	13	391
Total...	134	647	131	50	206	313	500	600	450	7	52	55	9	287	83	265	48	46	6,305	317	6,622

^a No escapes from Bilibid Prison. Those recorded were from working parties in city under municipal police and Philippine constabulary guards.

TABLE III.—Changes in population of prison relative to the length of sentence of prisoners in confinement on July 1, 1904, and those received during the fiscal year ending June 30, 1905 (morning count).

	July 1, 1904.			August 1, 1904.			September 1, 1904.			October 1, 1904.		
	In confine- ment.	Received.	Dropped.	In confine- ment.	Received.	Dropped.	In confine- ment.	Received.	Dropped.	In confine- ment.	Received.	Dropped.
Detention.....	677	82	78	681	74	40	715	84	57	742	107	45
Under 31 days.....	80	103	119	44	141	123	62	139	148	53	82	98
1 to 6 months.....	229	122	96	255	134	110	279	136	135	280	87	91
6 to 12 months.....	137	19	25	131	36	24	143	19	22	140	18	15
12 to 18 months.....	82	9	10	81	7	7	81	3	6	78	7	13
18 months to 2 years..	38	8	.....	46	.....	.....	44	.....	6	42	.....	.....
2 to 5 years.....	611	25	23	613	59	8	664	29	16	677	35	64
5 to 10 years.....	583	9	16	576	21	6	591	10	10	591	33	12
10 to 20 years.....	840	12	33	819	24	11	832	8	18	822	35	28
20 to 30 years.....	711	11	12	710	9	6	713	24	20	717	51	18
30 to 70 years.....	220	3	3	220	7	.....	225	.....	2	223	6	7
Life.....	130	1	1	130	.....	3	127	.....	4	123	1	19
Aggregate.....	4,318	404	416	4,306	514	344	4,476	456	444	4,488	461	417

	November 1, 1904.			December 1, 1904.			January 1, 1905.			February 1, 1905.		
	In confine- ment.	Received.	Dropped.	In confine- ment.	Received.	Dropped.	In confine- ment.	Received.	Dropped.	In confine- ment.	Received.	Dropped.
Detention.....	804	77	85	796	91	95	792	97	84	805	111	109
Under 31 days.....	37	86	78	45	55	75	25	46	36	35	59	59
1 to 6 months.....	276	70	104	242	95	92	245	82	104	223	81	70
6 to 12 months.....	140	21	30	131	16	20	127	16	22	121	29	29
12 to 18 months.....	72	4	6	70	3	6	67	16	8	75	16	11
18 months to 2 years..	38	.....	.....	30	.....	.....	27	.....	6	21	.....	.....
2 to 5 years.....	648	30	59	609	26	27	608	22	47	593	32	125
5 to 10 years.....	612	13	21	604	17	18	603	7	71	539	21	143
10 to 20 years.....	829	31	31	829	31	31	829	25	52	802	43	94
20 to 30 years.....	750	14	17	747	42	10	779	189	41	827	46	199
30 to 70 years.....	221	11	16	216	2	7	211	5	11	205	10	19
Life.....	105	1	7	99	9	2	106	7	9	104	.....	7
Aggregate.....	4,532	358	472	4,418	387	386	4,419	515	494	4,440	450	862

	March 1, 1905.			April 1, 1905.			May 1, 1905.			June 1, 1905.			In confinement June 30, 1905.
	In confine- ment.	Received.	Dropped.	In confine- ment.	Received.	Dropped.	In confine- ment.	Received.	Dropped.	In confine- ment.	Received.	Dropped.	
Detention.....	807	140	171	776	90	135	731	42	171	602	72	81	563
Under 31 days.....	35	65	74	26	46	46	26	63	55	34	59	62	31
1 to 6 months.....	234	92	87	239	68	72	235	68	69	234	84	106	212
6 to 12 months.....	121	45	62	104	10	23	91	33	19	105	21	25	104
12 to 18 months.....	84	15	25	74	12	7	79	11	5	85	14	19	80
18 months to 2 years..	12	4	5	11	.....	9	2	.....	2	3	1	.....	1
2 to 5 years.....	490	30	69	451	11	58	404	32	14	422	54	29	447
5 to 10 years.....	417	44	128	333	21	97	257	59	5	311	38	18	331
10 to 20 years.....	751	34	229	556	29	159	426	62	8	480	62	26	516
20 to 30 years.....	784	83	179	688	111	263	516	64	5	575	31	12	564
30 to 70 years.....	196	3	31	168	2	43	127	2	.....	129	9	5	133
Life.....	97	22	7	112	11	44	79	14	.....	93	4	5	92
Aggregate.....	4,028	577	1,067	3,538	411	976	2,973	453	353	3,073	449	391	3,131

TABLE IV.—*Convicts punished during fiscal year ending June 30, 1905.*

Length of sentence.	Number of times punished.															Over 15.	Total punished.	Grand total confined during year	Percentage of grand total for each class sentenced.
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.				
30 days or less.....	122	29	4	1													156	1,007	14.49
30 days to 6 months.....	302	165	97	59	39	27	11	14	16	12	3	6	2	9	1	9	777	1,348	50.22
6 months to 1 year.....	64	43	21	21	10	6	5	2	2	2	1	3	3	7	1	7	196	420	46.5
1 to 5 years.....	297	42	143	80	43	29	23	20	5	7	1	3	3	7	1	7	711	1,257	56.64
5 to 10 years.....	298	31	104	68	41	17	10	12	2	3	2		2	1			591	876	66.21
10 to 20 years.....	325	226	178	84	74	36	27	24	11	4	2	1	1		1		994	1,236	80.42
20 to 30 years.....	78	71	46	24	22	4	6	3	2	3	1	2			1		263	1,386	18.97
30 to 70 years.....	6	1	5	3	1	2	2	2	1	2							25	279	8.96
Life.....	46	29	15	11	6	3	4		1								115	200	57.5
Total.....	1,538	637	613	351	236	124	88	77	40	33	10	15	11	19	4	27	3,828	8,009	47.79

During the year 1,744 detention prisoners were in confinement who were not given conduct rating.

TABLE V.—*Educational accomplishment of prisoners in confinement June 30, 1905.*

College or university.....	106
Common school.....	952
Self.....	837
Illiterate.....	1,236
Total.....	3,131
Read and write.....	1,418
Read and can not write.....	477
Illiterate.....	1,236
Total.....	3,131

TABLE VI.—*Known number of times that prisoners in confinement on June 30, 1905, had been convicted.*

First commitment.....	2,987	Ninth commitment.....	3
Second commitment.....	59	Eleventh commitment.....	1
Third commitment.....	32	Twelfth commitment.....	1
Fourth commitment.....	12	Thirteenth commitment.....	2
Fifth commitment.....	15	Twenty-third commitment.....	1
Sixth commitment.....	6	Thirty-fifth commitment.....	1
Seventh commitment.....	5		
Eighth commitment.....	6	Total.....	3,131

TABLE VII.—*Domestic relations of prisoners.*

	In confinement July 1, 1904.	Received.	Dropped.
Married.....	2,045	2,243	2,820
Single.....	2,263	2,866	3,495
Widowers.....	5	273	249
No record.....	5	53	58
	4,318	5,435	6,622

TABLE VIII.—*Changes in prison population relative to crimes for which commitments were made (morning count).*

	In confinement July 1, 1904.	Received.	Dropped.
Accomplice to assassination.....	10	4	10
Accomplice to parricide.....	1		
Accomplice to larceny.....		12	10
Accomplice to robbery.....	1	17	18
Adultery.....	9	28	23
Arson.....	32	13	23
Abduction.....	10	11	21
Assault.....	16	39	49
Assault with deadly weapon.....	2		
Assault with intent to kill.....	15	2	4
Assault and battery.....	54	80	110
Assassination.....	218	6	13
Abortion.....	1		1
Attempted rape.....	13	16	15
Attempted arson.....	1		
Attempted robbery.....	7	3	10
Attempted assault.....	1		
Attempted murder.....	3	4	7
Attempted larceny.....		4	4
Attempted homicide.....	10	8	12
Attempted bribery.....	2	7	7
Attempted parricide.....	1	8	2
Attempted assassination.....	1	3	1
Aiding the insurrection.....	1	1	1
Aiding the brigands.....		7	
Bigamy.....	5	8	10
Brigandage.....	982	1,049	1,152
Burglary.....	15	2	13
Bribery.....	2	2	3
Conspiracy.....	33	22	50
Corruption of minors.....	1	10	6
Counterfeiting money.....	2	6	2
Counterfeiting bank notes.....	3	1	2
Disturbing the peace.....	19	28	30
Discharging firearms.....	5	1	1
Desertion.....	13	11	17
Damages to property.....		4	4
Embezzlement.....	55	173	190
Extortion.....	1		1
Expressing seditious utterances.....		7	7
Forgery.....	17	17	26
False testimony.....		12	10
Falsification.....	5	14	15
False accusation.....		2	2
Falsification of private document.....	8	1	6
Falsification of public document.....		7	6
Frustrated arson.....	1		1
Frustrated robbery.....	3		3
Frustrated larceny.....		2	2
Frustrated assassination.....	15	22	29
Frustrated parricide.....	1		1
Frustrated homicide.....	7	11	7
Frustrated rape.....	3	2	4
Frustrated embezzlement.....		1	1
Grand larceny.....	1		
Homicide.....	360	162	336
Highway robbery.....	247	157	226
Illegal detention.....	48	21	36
Illegal association.....	5		5
Insurrection.....	153	82	161
Impersonating an officer of the law.....	10	13	18
Illegal possession of firearms.....	9	21	30
Illegal possession of tools.....	1		1
Infraction of city ordinance.....	101	1,144	1,201
Incompliance with official duties.....		90	72
Larceny.....	307	589	668
Lunacy.....	6	43	49
Libel.....		3	3
Manlaughter.....	22		16
Misappropriation of public funds.....	17	12	14
Murder.....	344	182	370
Negligence of duty.....	9	1	2
Obscenity.....	1	3	4
Parricide.....	29	14	34
Perjury.....	4		2
Practicing medicine without a license.....		3	3
Physical injuries.....	3	27	30
Rape.....	76	81	80
Rebellion.....	16	6	4
Robbery.....	315	324	468

TABLE VIII.—*Changes in prison population relative to crimes for which commitments were made (morning count)*—Continued.

	In confinement July 1, 1905.	Received.	Dropped.
Robbery by four or more persons.....		3	3
Receiving stolen goods.....		1	1
Resisting the authority.....		8	8
Seduction.....		1	1
Sleeping on post.....	3	4	7
Sedition.....	270	34	209
Serious injuries.....	40	24	28
Treason.....	37	1	12
Torture by water.....	1	1	
Threats.....	5	7	5
Theft.....	53	36	60
Traffic in slavery.....	3	4	6
Unlawful entry.....	8	14	11
Unlawful practice of dental surgery.....		1	1
Usurpation of charge.....	1	3	3
Violation of industrial laws.....		12	10
Vagrancy.....	121	466	317
Violation of liquor laws.....		11	11
Violation of acts of the Philippine Commission.....	2	11	11
Violation of the immigration laws.....	1		
Violation of the laws of war.....	14	10	18
Violation of oath of allegiance.....	18	1	9
Violation of Articles of War.....	7	7	6
Violation of the civil-service rules.....		5	3
Crimes not stated in commitments.....	31	102	80
Sequestration and kidnapping.....	14	2	7
Total.....	4,318	5,435	6,622

TABLE IX.—*Nativity of prisoners in confinement (morning count).*

	In confinement July 1, 1905.	Received.	Dropped.		In confinement July 1, 1905.	Received.	Dropped.
PHILIPPINE PROVINCES.				PHILIPPINE PROVINCES—continued.			
Abra.....	41	12	25	Paragua.....		3	1
Albay.....	186	61	106	Romblon.....	8	14	19
Ambos Camarines.....	66	76	84	Samar.....	101	258	234
Antique.....	29	24	36	Sorsogon.....	53	19	38
Bataan.....	44	75	89	Tarlac.....	86	56	91
Batangas.....	249	443	457	Tayabas.....	110	66	101
Batanes.....	3	14	12	Union.....	102	74	114
Benguet.....	1	1	2	Zambales.....	142	33	113
Bohol.....	55	27	40	Zamboanga.....	37	31	57
Bulacan.....	296	464	573	Unknown.....	24	52	55
Cagayan.....	35	28	39				
Capiz.....	110	126	157	OTHER COUNTRIES.			
Cavite.....	266	239	329	Australia.....		3	2
Cebu.....	139	156	164	Austria.....	1	1	1
Cotabato.....	7	2	9	Borneo.....		1	1
Ilocos Norte.....	102	102	126	China.....	51	144	163
Ilocos Sur.....	195	81	144	Canada.....	1		1
Iloilo.....	143	182	200	Denmark.....		1	1
Isabela.....	20	10	11	Great Britain.....	15	32	43
Jolo.....	16	10	23	Germany.....	7	3	5
Laguna.....	102	156	171	India.....		7	7
Leyte.....	117	72	105	Italy.....	1		
Lepanto-Bontoc.....	2	16	13	Japan.....	2	16	12
Manila.....	194	466	530	Mexico.....	1		
Masbate.....	53	3	13	Norway.....		3	1
Mindoro.....	58	25	59	Russia.....	4	2	3
Marinduque.....	14	29	36	Straits Settlements.....		1	1
Misamis.....	73	270	273	South America.....		11	11
Mindanao.....	7	12	17	Switzerland.....		1	1
Negros Oriental.....	28	36	50	Spain.....	7	10	11
Negros Occidental.....	13	17	24	Sweden.....		5	5
Nueva Ecija.....	124	169	178	United States.....	77	223	219
Nueva Vizcaya.....	4	9	3				
Pampanga.....	206	473	538				
Pangasinan.....	226	127	227				
Rizal.....	234	340	414				
				Total.....	4,318	5,435	6,622

TABLE X.—Changes in prison population, relative to court by which prisoners were committed, for the fiscal year ending June 30, 1905 (morning count).

Courts.	In confinement July 1, 1904.	Received.	Dropped.	In confinement June 30, 1905.
Spanish courts.....	122	4	86	40
General court-martial (United States).....	21	11	13	19
Military commission and provost courts (United States).....	410	33	254	189
Municipal court, Manila.....	423	2,276	2,401	298
Court of customs appeals.....	2	1	1	2
Courts of first instance:				
Manila.....	387	399	493	293
Mountain district.....	23	38	18	43
First district.....	87	23	53	57
Second district.....	199	69	111	157
Third district.....	316	51	179	188
Fourth district.....	227	117	161	183
Fifth district.....	319	103	219	203
Sixth district.....	388	183	284	287
Seventh district.....	322	230	255	297
Eighth district.....	297	91	154	234
Ninth district.....	91	145	117	119
Tenth district.....	66	28	75	19
Eleventh district.....	121	163	164	120
Twelfth district.....	207	298	283	222
Thirteenth district.....	167	268	323	112
Fourteenth district.....	52	57	96	13
Fifteenth district.....	68	38	71	35
Justice of the peace.....		4	4	
Order of governor-general.....	2	14	16	
Constabulary prisoners.....	1	13	13	1
Total.....	4,318	4,667	5,844	3,131

TABLE XI.—Occupation of prisoners prior to their commitment (morning count).

	In confinement July 1, 1904.	Received.	Dropped.		In confinement July 1, 1904.	Received.	Dropped.
Artists.....	4	6	6	Millers.....		1	1
Agents.....	5	1	1	Machinists.....	6	13	12
Accountants.....	6	1	5	Mariners.....	3	25	26
Barbers.....	25	35	43	Milk sellers.....	3	1	2
Blacksmiths.....	14	18	23	Mechanics.....	2	5	6
Bookbinders.....	2	3	5	Musicians.....	17	12	14
Bakers.....	25	13	12	Miners.....	2	2	3
Beltmakers.....	1	5	5	Masons.....	20	40	44
Bookkeepers.....	3	6	5	Newspaper distribu-			
Butchers.....	1	3	3	tors.....	1	15	13
Brokers.....		2	1	Operators.....		2	2
Beggars.....	10	20	30	Plumbers.....		2	1
Carpenters.....	62	92	105	Photographers.....	3	2	3
Clerks.....	122	132	162	Pilots.....	2	4	4
Cooks.....	33	84	90	Painters.....	19	56	53
Coachmen.....	126	405	436	Printers.....	7	9	12
Chaplains.....	1		1	Police-men.....	6	80	60
Confectioners.....	3	3	5	Postmasters.....	1		
Cigar makers.....	37	87	97	Physicians.....	3	1	2
Carriage makers.....	3	9	8	Packers.....		2	2
Draughtsmen.....	2	3	3	Servants.....	81	274	278
Druggists.....	2	4	3	Soldiers.....	39	50	52
Engineers.....	6	9	12	Seamen.....	67	79	106
Electricians.....	7	7	7	Seamstresses.....	16	52	58
Fishermen.....	138	110	146	Students.....	17	32	30
Farmers.....	229	33	144	Silversmiths.....	18	26	23
Foremen.....	3	7	6	Shoemakers.....	12	22	24
Furriers.....	2	1		Shopmen.....	17	42	59
Firemen.....	5	19	19	Teachers.....	5	10	9
Gardeners.....	11	4	11	Teamsters.....	4	36	31
Grass cutters.....	4	20	22	Tailors.....	30	63	61
Hostlers.....	4		2	Tinsmiths.....	5	10	13
Hatters.....	3	5	5	Turners.....		1	1
Harness makers.....				Venders.....	3	2	3
Interpreters.....	1	1	2	Vaccinators.....		2	2
Jewelers.....		2		Watchmen.....	4	8	6
Jockeys.....	2	2	3	Weavers.....	6	8	8
Journalists.....	1	4	4	Waiters.....		1	
Laundrymen.....	14	21	28	Wheelwrights.....	1		
Laundresses.....	8	174	165	Watchmakers.....		2	2
Laborers.....	2,896	3,016	3,873				
Locksmiths.....		1	1	Total.....	4,318	5,435	6,622
Merchants.....	77	75	97				

TABLE XII.—*Age of prisoners when received for confinement (morning count).*

Age.	In confinement July 1, 1904.	Received.	Dropped.
5 years.....	1		1
9 years.....		2	2
11 years.....	1	3	3
12 years.....	6	17	19
13 years.....	9	15	20
14 years.....	19	44	52
15 years.....	40	109	109
16 to 20 years.....	483	920	1,073
20 to 30 years.....	1,886	2,358	2,843
30 to 40 years.....	1,066	1,243	1,544
40 to 50 years.....	389	401	518
50 to 60 years.....	175	176	249
60 to 70 years.....	59	68	86
70 to 100 years.....	9	22	28
Over 100 years.....	1		1
Age unknown.....	174	57	74
Total.....	4,318	5,435	6,622

TABLE XIII.—*Signalletic records taken during the fiscal year ending June 30, 1905.*

Prisoners recorded on carpetas.....	4,296
Signalments taken (Bertillon system).....	2,133
Signalletic cards verified.....	2,383
Likenesses found identical.....	240
Duplicate signalletic cards furnished for identification purposes.....	131
Photograph plates made (front and profile).....	3,634
Photograph prints taken from plates.....	4,500
Photographs of prisoners furnished for identification purposes.....	675
Photographs of furniture, carriages, wagons, etc., made in prison shops.....	99
Photographs of diseased prisoners taken for resident physician.....	9
Identification records verified.....	5,488
Daily average of signalments taken.....	7
Daily average of signalletic cards verified.....	8
Daily average of photographs taken.....	12
Daily average of carpetas filed.....	14

FINANCIAL STATISTICS.

Appropriation account, bureau of prisons, fiscal year 1905.

Date.	Items.	Salaries and wages.	Contingent expenses.	Manufacturing department.
August, 1904.....	General appropriation Act No. 1225.....	P 170,000.00	P 490,000.00	P 90,000.00
October, 1904.....	Special appropriation Act No. 1246.....			
May, 1905.....	Special appropriation Act No. 1342.....			
June, 1905.....	Deficiency appropriation Act No. 1365.....	29,700.00	15,060.00	22,500.00
	Total.....	199,700.00	505,060.00	112,500.00
June 30, 1904, to June 30, 1905.	Disbursements.....	186,516.03	490,857.44	96,427.47
	Balance to credit of bureau of prisons.....	13,183.97	14,202.56	16,072.53

Date.	Items.	Electric plant.	Permanent improvements.	Total.
August, 1904.....	General appropriation Act No. 1225.....			P 750,000.00
October, 1904.....	Special appropriation Act No. 1246.....	P 15,000.00		15,000.00
May, 1905.....	Special appropriation Act No. 1342.....		P 100,000.00	100,000.00
June, 1905.....	Deficiency appropriation Act No. 1365.....			67,260.00
	Total.....	15,000.00	100,000.00	932,260.00
June 30, 1904, to June 30, 1905.	Disbursements.....	9,000.00	15,130.15	797,931.09
	Balance to credit of bureau of prisons.....	6,000.00	84,869.85	134,329.91

Miscellaneous receipts, Bilibid prison, fiscal year 1905.

Month.	Maintenance of provincial prisoners.	Maintenance of city of Manila prisoners.	Maintenance of prisoners held for debt.	Deceased prisoners, confiscation, etc.	
				Philippine currency.	Local currency.
1904.					
July.....	P 3,812.40	P 5,295.40		P 9.14	0.10
August.....	8,642.20	5,285.80	P 4.20	19.85	4.36
September.....	2,347.20	5,554.00	16.80		
October.....	2,619.80	6,014.80	16.80	9.09	.18
November.....	7,775.80	5,838.40	21.00	3.00	2.00
December.....	4,934.80	5,291.60	16.80	40.47	3.24
1905.					
January.....	626.80	5,221.00	21.00	4.00	2.01
February.....	6,135.00	4,797.80	16.80	2.00	.38
March.....	5,806.40	4,148.00	29.40	21.86	.25
April.....	964.20	4,615.00		.27	
May.....	1,620.40	4,314.20		2.33	.77
June.....	182.80	4,225.80		13.31	
Total.....	45,467.80	60,601.80	142.80	113.32	13.29

Month.	Sales and laundry department and photos.		Maintenance military prisoners.	Total.	
	Philippine currency.	Local currency.		Philippine currency.	Mexican currency.
1904.					
July.....	P 1,578.78	4.02		P 10,695.72	\$4.12
August.....	2,639.63			16,591.68	4.36
September.....	3,653.82			11,771.82	
October.....	5,384.77			14,045.26	.18
November.....	3,909.82			17,548.02	2.00
December.....	4,974.34			15,258.01	3.24
1905.					
January.....	2,993.28		P 4,192.80	13,058.88	2.01
February.....	4,748.80			15,700.40	.38
March.....	6,041.55			16,047.21	.25
April.....	4,455.55			10,035.02	
May.....	6,268.95			12,205.88	.77
June.....	4,752.10			9,162.01	
Total.....	51,601.39	4.02	4,192.80	162,119.91	17.31

Amounts due Bilibid prison for maintenance of prisoners.

Province.	Period for which due.	Due prior to June 30, 1904, and now unpaid.	Due and unpaid fiscal year 1905.	Total due and unpaid June 30, 1905.
Abra.....	Apr., 1904, to Mar. 30, 1905.....		P 446.80	P 446.80
Aibay.....	Jan. 1, 1905, to June 30, 1905.....		529.60	529.60
Ambos Camarines.....	do.....		1,938.40	1,938.40
Antique.....	do.....		315.60	315.60
Bataan.....	do.....			216.00
Batangas.....	Apr. 1, 1903, to June 30, 1905.....	P 1,752.80	8,599.00	10,351.80
Bulacan.....	Jan. 1 to June 30, 1905.....		7,057.60	7,057.60
Cavite.....	Jan. 1, 1904, to June 30, 1905.....	4,406.40	10,491.60	14,898.00
Capiz.....	Jan. 1 to June 30, 1905.....		576.40	576.40
Cebu.....	do.....		2,778.00	2,778.00
Ilocos Norte.....	Apr. 1, 1904, to June 30, 1905.....	144.00	1,021.20	1,165.20
Ilocos Sur.....	Oct. 1, 1904, to June 30, 1905.....		5,313.60	5,313.60
Iloilo.....	Jan. 1 to June 30, 1905.....		2,027.20	2,027.20
Isabela.....	do.....		1,134.40	1,134.40
Laguna (balance).....	June 1, 1903, to Mar. 30, 1905.....	113.20		
Do.....	Jan. 1 to June 30, 1905.....		2,227.20	2,340.40
La Union.....	do.....		318.40	318.40
Lepanto Bontoc.....	July 1, 1904, to June 30, 1905.....		688.40	688.40
Leyte.....	Jan. 1 to June 30, 1905.....		1,008.40	1,008.40
Masbate.....	do.....		434.80	434.80
Mindoro.....	do.....		2,354.80	2,354.80
Misamis.....	do.....		5,567.60	5,567.60
Nueva Ecija.....	May 1 to May 30, 1903.....	160.00		
Do.....	July 1, 1904, to June 30, 1905.....		11,045.40	11,205.40
Occidental Negros.....	Apr. 1 to June 30, 1904.....	305.80		
Do.....	Jan. 1 to June 30, 1905.....		19.20	325.00
Oriental Negros.....	do.....		415.60	415.60
Pampanga.....	do.....		2,293.80	2,293.80
Rizal.....	July 1, 1904, to June 30, 1905.....		6,224.30	6,224.30
Romblon.....	Jan. 1 to June 30, 1905.....		76.40	76.40
Pangasinan.....	do.....		1,466.80	1,466.80
Samar.....	do.....		892.20	892.20
Sorsogon.....	do.....		13.20	13.20
Surigao.....	do.....		1,916.40	1,916.40
Tarlac.....	do.....		1,547.60	1,547.60
Tayabas.....	do.....		909.60	909.60
Zambales.....	Jan. 1 to June 30, 1904.....	176.00		
Do.....	Apr. 1 to June 30, 1905.....		150.00	326.00
Moro Province.....	Apr. 1 to July 15, 1903.....	78.40		
Do.....	Jan. 1 to June 30, 1905.....		828.40	906.80
Total provinces.....		7,136.60	82,854.10	89,990.70
Military, U. S. A.....	Mar. 1, 1902, to Sept. 30, 1904.....	82,138.94	680.20	82,828.14
City of Manila.....	June, 1905.....		3,975.00	3,975.00
Grand total due, June 30, 1905.....			87,518.30	176,793.84

EXHIBIT A.—Quantity and cost of native and Asiatic prisoners' subsistence, and the average cost per day for the fiscal year ending June 30, 1905.

	July, 1904.		August, 1904.		September, 1904.		October, 1904.	
	Quan- tity.	Cost.	Quan- tity.	Cost.	Quan- tity.	Cost.	Quan- tity.	Cost.
Beef, fresh... pounds.	21,900	₱ 6,132.60	20,810	₱ 5,094.00	36,835	₱ 7,367.00	28,365	₱ 3,971.10
Beef, corned... do.	1,464	402.60	768	211.20				
Camotes... do.	15,000	337.50	20,000	450.00	21,446	281.10	2,330	32.62
Fish... do.	3,600	432.00	3,600	432.00				
Flour... do.	54,000	3,246.00	49,000	2,940.00	54,850	3,094.13	66,360	3,765.50
Ginger root... do.	900	72.00	900	72.00	900	72.00	900	69.00
Hops... do.	40	35.20	70	58.10	80	66.40	90	74.70
Lard... do.	60	19.20						
Mutton... do.	10,885	2,582.50	13,263	3,504.30	17,100	4,590.00	16,000	2,800.00
Mangos... do.	4,465	319.25	3,400	152.00				
Onions... crates.	75	286.50	60	220.00	70	228.75	153½	452.50
Pork... pounds.	6,500	1,766.00	9,850	2,758.00	2,000	560.00	14,000	3,500.00
Potatoes... crates.	223	692.00	245	940.00	383	1,124.00	619	1,896.90
Pepper... bottles.	28	3.48	30	3.30	30	3.30	30	21.18
Peaches... pounds.	3,660	256.20	2,820	197.40	2,700	189.00		
Rice... do.	60,915	2,426.34	70,381	2,780.05	70,430	2,781.99	75,496	2,483.23
Salmon... do.	2,016	363.04	1,536	281.84			860	182.40
Salt... do.	3,465	89.30	4,040	80.80	3,750	75.00	3,850	53.40
Sugar... do.	7,450	819.50	6,200	682.00	6,100	671.00	6,425	590.85
Vinegar... gallons.	17	16.83	34½	34.16	5	4.95	30	10.50
Malt... pounds.			100	20.00			100	20.00
Total.....		20,275.04		20,921.15		21,108.62		19,923.88
Total rations.....	126,025		127,951½		127,806		132,506½	

	November, 1904.		December, 1904.		January, 1905.		February, 1905.	
	Quan- tity.	Cost.	Quan- tity.	Cost.	Quan- tity.	Cost.	Quan- tity.	Cost.
Beef, fresh... pounds.	28,100	₱ 3,934.00	28,050	₱ 3,927.00	26,660	₱ 3,732.40	26,100	₱ 3,654.00
Beef, corned... do.	744	204.60	1,670	382.71	2,932	711.17	610	143.00
Camotes... do.			26,374	382.42	52,459	869.18	45,670	767.28
Fish... do.			3,800	380.00	16,400	1,640.00	14,300	1,430.00
Flour... do.	53,850	3,047.91	50,500	2,858.30	58,900	3,113.44	54,800	2,805.76
Ginger root... do.	900	67.50	650	48.75	1,023	81.84	684	54.72
Hops... do.	100	83.00	150	112.50	1,150	112.50	150	112.50
Mutton... do.	11,800	2,065.00	9,690	1,473.17	6,100	963.00	3,200	446.00
Mangos... do.			400	18.80	570	27.45	500	25.00
Onions... crates.	10,400	338.00	350	11.38	5,025	251.25	6,390	319.50
Pork... pounds.	17,600	4,400.00	19,513	4,878.25	14,300	3,575.00	10,800	2,700.00
Potatoes... crates.	58,900	1,825.90	57,400	1,779.40	40,400	1,575.60	30,900	1,205.10
Pepper... bottles.	30	21.18	25	17.65	10	3.00	28	8.40
Rice... pounds.	80,664	2,621.58	76,618	2,545.66	89,555	3,462.65	69,352	2,704.73
Salmon... do.					2,016	362.88	3,840	691.20
Salt... do.	4,500	54.00	4,680	56.16	5,570	55.70	3,775	37.75
Sugar... do.	6,400	582.40	6,900	627.90	8,250	757.05	6,180	460.72
Vinegar... gallons.	7	2.45	40	14.00	38	13.30		
Malt... pounds.	100	20.00	100	20.00	100	20.00	100	20.00
Hard bread... do.	3,000	392.10	8,000	1,341.36				
Beans, Sampaloc... do.			800	32.00	2,550	102.00	2,400	96.00
Bread... No. 2 loaves			14,297	2,287.52				
Tomatoes... cases					4	19.40		
Total.....		19,659.62		23,194.93		21,478.81		17,681.64
Total rations.....	125,834		133,104		128,258		115,286	

*Pounds.

EXHIBIT A.—Quantity and cost of native and Asiatic prisoners' subsistence, and the average cost per day for the fiscal year ending June 30, 1905—Continued.

	March, 1905.		April, 1905.		May, 1905.		June, 1905.	
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.
Beef, fresh.....pounds..	26,100	₱ 3,654.00	22,465	₱ 3,145.10	25,250	₱ 3,535.00	20,310	₱ 2,843.40
Beef, corned.....do.....	192	44.00	1,244	243.58	141	47.27	a 3	40.50
Camotes.....do.....	35,632	598.62					b 1	4.25
Fish.....do.....	13,210	1,321.00	8,791	817.09	5,849	773.24	3,714	768.28
Flour.....do.....	55,590	2,846.21	33,860	1,733.63	33,740	1,728.00	38,228	1,932.58
Ginger root.....do.....	745	59.60	637	50.96	620	49.60	660	46.43
Hops.....do.....	145	67.90	130	41.60	115	36.80	110	35.20
Mutton.....do.....	2,800	400.00						
Mangos.....do.....			70	3.50	2,580	129.00	6,300	311.65
Onions.....crates.....	5,550	277.50	9,340	467.00	5,490	274.50	8,320	416.00
Pork.....pounds.....	9,700	2,425.00	10,100	2,525.00	9,700	2,425.00	12,600	3,150.00
Potatoes.....crates.....	36,100	1,407.90	40,000	1,560.00	33,200	1,294.80	25,550	996.45
Pepper.....bottles.....	c 31	9.30	d 31	3.10	e 31	3.10	f 33	6.80
Rice.....pounds.....	66,246	2,583.59	52,710	2,069.55	50,440	2,003.71	51,587	2,072.53
Salmon.....do.....	e 73	641.90	a 124	1,147.00	a 72	612.00	a 63	535.50
Salt.....do.....	4,506	45.06	4,778	47.78	4,780	47.80	4,950	49.44
Sugar.....do.....	6,165	459.60	5,245	391.01	5,098	464.55	5,557	652.95
Vinegar.....gallons.....			46	25.30	45	24.75	68	51.65
Malt.....pounds.....	100	20.00	150	30.00	100	20.00	50	10.00
Beans, Sampaloc.....do.....	2,850	114.00	2,105	84.20	3,336	133.44	1,666	66.64
Tomatoes.....cases.....							e 5	25.00
Beans, navy.....pounds.....							2,400	162.00
Total.....		16,975.18		14,385.40		13,612.56		14,177.25
Total rations.....	106,257		89,983		86,007		86,366	

a Cans.

b Sack.

c Pounds.

d Bottles.

e Casks.

Total number of rations.....	1,385,383
Total value of rations.....	₱ 223,394.08
Average cost per ration.....	₱ 0.1612

EXHIBIT B.—Quantity and cost of American and European prisoners' subsistence and the average cost per day for the fiscal year ending June 30, 1905.

	July, 1904.		August, 1904.		September, 1904.		October, 1904.	
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.
Beef, fresh.....pounds..	1,750	₱ 560.00	1,940	₱ 514.00	2,950	₱ 590.00	3,130	₱ 438.20
Bananas.....number.....	400	6.00						
Beans.....pounds.....	188	20.68	285	31.35	252	27.72	210	17.12
Coffee.....do.....	30	9.00	30	9.00	30	9.00		
Cream.....cans.....	22	4.84	48	8.50				
Fruit, dried.....pounds.....	30	10.20						
Eggs.....number.....	2,480	74.40	2,405	72.15	2,725	81.75	3,720	95.58
Flour.....pounds.....	5,000	300.00	5,000	300.00	5,000	300.00	5,000	300.00
Hominy.....do.....	200	22.00	180	19.80	220	24.20		
Mutton.....do.....	300	84.00	360	100.80	260	72.80		
Onions.....crates.....	4	16.00	7	28.00	6	21.00	84	26.00
Oatmeal.....pounds.....	244	29.28	240	28.80	184	22.08	276	33.12
Potatoes.....crates.....	20	80.00	20	80.00	25	100.00	30	93.00
Pepper.....pounds.....	4	4.84	a 5	55	a 10	1.10	4	2.82
Pork.....do.....	350	98.00	420	117.60	100	28.00	700	175.00
Salt.....do.....	150	3.00	150	3.00	150	3.00	150	3.00
Sugar.....do.....	350	38.50	550	60.50	500	55.00	500	55.00
Tea.....do.....	6	4.80	5	4.00			4	3.52
Beef, corned.....do.....			96	26.40	96	26.40	144	39.60
Rice.....do.....							120	4.74
Vinegar.....gallons.....							6	2.28
Total.....		1,365.54		1,404.45		1,362.05		1,288.98
Total rations.....	3,363		3,496		3,411		3,322	

a Bottles.

EXHIBIT B.—Quantity and cost of American and European prisoners' subsistence and the average cost per day for the fiscal year ending June 30, 1905—Continued.

	November, 1904.		December, 1904.		January, 1905.		February, 1905.	
	Quan- tity.	Cost.	Quan- tity.	Cost.	Quan- tity.	Cost.	Quan- tity.	Cost.
Beef, fresh.... pounds..	2,850	₹ 399.00	3,000	₹ 420.00	3,070	₹ 429.80	2,975	₹ 416.50
Bananas.....number..	400	2.40	400	4.00				
Beans.....pounds..	270	22.01	330	26.90	305	24.40	185	14.80
Coffee.....do.....			70	24.50	120	42.00	103	34.51
Eggs.....number..	3,540	84.96	6,900	165.00	6,030	144.72	3,050	73.20
Flour.....pounds..	3,000	169.80	2,500	141.50	2,000	102.40	2,000	102.40
Onions.....crates..	900	29.25	600	19.50	600	30.00	540	27.00
Oatmeal.....pounds..	205	41.00	30	6.00	40	7.40	115	21.28
Potatoes.....crates..	a 3,000	93.00	2,800	86.80	2,600	91.00	2,700	105.30
Pepper.....pounds..	5	3.53					4	1.20
Pork.....do.....	920	230.00	1,050	262.50	700	175.00	500	125.00
Salt.....do.....	150	1.80	160	1.92	150	1.50	150	1.50
Sugar.....do.....	500	45.50	450	40.95	350	26.09	370	27.58
Rice.....do.....	120	3.90	120	3.90				
Vinegar.....gallons..	5	1.75						
Sauerkraut.....cases..	1	8.50						
Bacon.....pounds..			27	10.53				
Corn, green.....cases..			2	13.00				
Rasins.....pounds..			5	1.50				
Tomatoes.....cases..					1	4.85		
Total.....		1,136.40		1,229.10		1,079.16		950.27
Total rations.....	2,929		3,117		2,709		2,385	

	March, 1905.		April, 1905.		May, 1905.		June, 1905.	
	Quan- tity.	Cost.	Quan- tity.	Cost.	Quan- tity.	Cost.	Quan- tity.	Cost.
Beef, fresh.... pounds..	3,680	₹ 515.20	3,235	₹ 452.90	2,555	₹ 357.70	2,365	₹ 331.10
Beans.....do.....	100	8.00	230	18.40	407	32.56	530	38.44
Coffee.....do.....	49	16.42	145	48.58	160	53.60	165	54.12
Cream.....cans.....			96	18.00				
Fruit, dried.....pounds..			65	10.84	165	27.51	240	40.00
Eggs.....number..	6,170	148.08	4,815	115.56	5,550	133.20	3,310	79.44
Flour.....pounds..	4,500	230.40	5,700	291.84	4,400	225.28	5,200	266.24
Onions.....crates..	790	39.50	900	45.00	900	45.00	800	40.00
Oatmeal.....pounds..	110	20.43	220	44.00	160	32.00	280	54.75
Potatoes.....crates..	3,100	120.90	3,000	117.00	3,000	117.00	2,600	101.40
Pepper.....pounds..	5	1.50	b 5	.50	a 7	.70	a 4	.40
Pork.....do.....	300	75.00	735	183.75	760	190.00	1,020	255.00
Salt.....do.....	190	1.90	170	1.70	194	1.94	170	1.70
Sugar.....do.....	400	29.82	490	36.53	500	58.75	550	64.63
Tea.....do.....			7	6.20				
Beef, corned.....do.....			72	14.10				
Rice.....do.....	50	1.95	100	3.90	250	10.00	400	16.52
Bacon.....do.....							63	19.15
Tomatoes.....cases..	3	15.00	5	25.00				
Codfish.....pounds..							25	5.00
Total.....		1,224.10		1,433.80		1,285.24		1,367.89
Total rations.....	3,287		3,818		3,252		3,452	

aPounds.

b Bottles.

Total number of rations.....	38,543
Total value of rations.....	₹ 15 126.98
Average cost per ration.....	₹ 0.392

EXHIBIT C.—Quantity and cost of subsistence for sick prisoners of all nationalities and the average cost per ration for the fiscal year ending June 30, 1906.

	July, 1904.		August, 1904.		September, 1904.		October, 1904.	
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.
Beef, fresh..... pounds.	620	P 198.40	630	P 201.60	750	P 150.00	850	P 119.00
Beef, corned..... do.	72	19.80	96	26.40	96	26.40	180	49.50
Baking powder..... do.	3	3.21	3	3.21				
Cream..... cans.	768	168.96	875	163.66	960	201.60	1,072	225.12
Chickens..... number.	56	28.00	52	26.00	52	26.00	44	22.00
Cornstarch..... pounds.	6	1.50						
Crackers, soda..... do.	18	5.04			6	1.68		
Cocoa..... do.	5	6.20	6	7.44	6	7.44	6	7.44
Eggs..... number.	1,488	44.64	1,820	54.60	1,800	54.00	1,860	48.24
Flour..... pounds.	800	48.00	1,000	60.00	1,000	60.00	1,200	72.00
Lemons..... case.	1	8.00						
Lemons..... number.	48	3.84						
Lard..... pounds.	65	20.80	35	11.20	30	9.60	5	1.60
Mangoes..... do.	35	2.50	100	4.25			392	18.42
Oatmeal..... do.	72	8.64	100	12.00	162	18.24	226	32.72
Onions..... cases.	3	12.00	3	12.00	4	14.00	4	14.00
Pepper..... pounds.	2	2.42			5	5.55	1	.71
Potatoes..... cases.	7	28.00	7	28.00	7	28.00	8	24.80
Rice..... pounds.	520	20.54	750	29.63	700	27.65	650	25.68
Sugar..... do.	500	55.00	550	60.50	600	66.00	675	74.25
Salt..... do.	85	1.70	110	2.20	100	2.00	100	2.00
Tea..... do.	8	6.40	8	6.40	10	8.00	7	6.16
Vinegar..... gallons.	3	2.97	3	2.97	5	4.95	3	1.23
Beef, extract..... jars.			4	5.72				
Beans, navy..... pounds.			75	8.25	50	5.50	100	11.00
Coffee..... do.			50	15.00	50	15.00		
Tomatoes..... cans.					48	14.40	96	28.80
Total.....		696.56		741.03		741.01		784.67
Total rations.....	1,378		1,754		1,959		2,260	

	November, 1904.		December, 1904.		January, 1905.		February, 1905.	
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.
Beef, fresh..... pounds.	1,420	P 198.80	1,550	P 217.00	1,500	P 210.00	1,200	P 168.00
Beef, corned..... do.	228	62.70	90	20.63				
Cream..... cans.	1,125	229.59	1,085	212.44	942	184.44	816	144.00
Chickens..... number.	52	26.00	232	116.00	234	117.00	201	100.50
Cornstarch..... pounds.			12	3.00				
Cocoa..... do.	12	14.88						
Eggs..... number.	2,410	57.84	3,100	74.40	3,100	74.40	2,800	67.20
Flour..... pounds.	2,000	113.20	2,000	113.20	1,800	92.16	1,450	74.24
Lemons..... case.							1	12.00
Lard..... pounds.	25	8.00						
Mangoes..... do.	500	23.50	700	32.90	550	25.85	300	15.00
Oatmeal..... do.	325	65.00	250	50.00	360	71.10	280	51.80
Onions..... cases.	600	19.50	500	16.25	800	26.00	600	30.00
Pepper..... pounds.	5	3.53					4	1.20
Potatoes..... cases.	700	21.70	800	24.80	900	35.10	700	27.30
Rice..... pounds.	1,000	32.50	1,400	45.50	1,500	58.50	2,028	79.09
Sugar..... do.	1,000	91.00	950	86.45	980	111.68	1,000	74.55
Salt..... do.	150	1.80	236	2.83	100	1.00	175	1.75
Tea..... do.	22	19.36	22	19.36	10	8.80	15	13.20
Vinegar..... gallons.	8	2.80			12	4.20	6	3.30
Beans, navy..... pounds.			30	2.45	60	4.89	35	2.80
Coffee..... do.	70	23.10	68	23.80	50	17.50	50	17.28
Tomatoes..... cans.			24	5.00	4	18.44	9	43.65
Fish..... pounds.					70	7.00	280	28.00
Lemon extract..... bottles.					12	6.12		
Salmon..... pounds.					48	8.64	48	8.64
Beans, Sampaloc..... do.							175	7.00
Camotes..... do.							40	.67
Ginger root..... do.							16	1.28
Total.....		1,014.80		1,066.01		1,082.82		972.45
Total rations.....	3,243		3,428		3,329		2,872	

a Bottles.

b Cases.

c Pounds.

d Cans.

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EXHIBIT C.—Quantity and cost of subsistence for sick prisoners of all nationalities and the average cost per ration for the fiscal year ending June 30, 1905—Continued.

	March, 1905.		April, 1905.		May, 1905.		June, 1905.	
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.
Beef, fresh..... pounds.	1,325	P 185.50	1,595	P 223.30	2,110	P 295.40	2,250	P 315.00
Beef, corned..... do.					a 1	6.75		
Cream..... cans.	a 15	153.00	a 11½	101.25	a 13	117.00	a 18	162.00
Chickens..... number.	207	103.50	202	101.00	207	103.50	198	99.00
Crackers, soda..... pounds.							a 1	17.00
Cocoa..... do.	10	10.60	10	10.60			10	10.60
Eggs..... number.	3,100	74.40	3,000	72.00	3,100	74.40	3,000	72.00
Flour..... pounds.	1,560	79.87	1,680	86.02	1,700	87.04	2,000	102.40
Lemons..... cases.	2	24.00			2	7.00		
Mangoes..... pounds.	360	18.00	280	14.00	221	11.05	584	29.20
Oatmeal..... do.	280	56.00	175	35.00	145	29.00	130	26.00
Onions..... cases.	400	20.00	500	25.00	300	15.00	500	25.00
Pepper..... pounds.	3	.90	b 4	.40	b 5	.50	b 7	.70
Potatoes..... cases.	800	31.20	800	31.20	800	23.40	450	17.55
Rice..... pounds.	1,400	54.60	1,100	42.90	1,800	40.64	1,340	55.34
Sugar..... do.	1,045	77.90	935	69.70	900	105.75	800	94.00
Salt..... do.	40	.40	130	1.30	140	1.40	60	.60
Tea..... do.	6	5.31	5	4.43	12	10.62	14	12.39
Vinegar..... gallons.	12	6.60	8	4.40	7	3.85	7	5.60
Beans, navy..... pounds.	70	5.60			97	7.76	50	4.00
Coffee..... do.	35	11.73	40	13.40	40	13.40	40	13.12
Tomatoes..... cans.	a 6	30.00	a 4	20.00	a 8	40.00	a 11	55.00
Fish..... pounds.	315	31.50	105	10.15				
Salmon..... do.	96	19.00	a 4	37.00			a 3	25.50
Beans, Sampaloc..... do.	225	9.00	75	3.00				
Camotes..... do.	40	.67						
Ginger root..... do.	35	2.80	32	2.56	2	.16	20	1.60
Dried fruit..... do.			15	2.50	60	10.00	80	13.33
Bacon..... do.							28	8.51
Codfish..... do.							50	10.00
Total.....		1,012.06		911.11		1,003.62		1,175.44
Total rations.....	2,789		2,522		3,162		4,486	

a Cans.

b Bottles.

Total number of rations.....	32,582
Total value of rations.....	P 11,201.60
Average cost per ration.....	P 0.344

EXHIBIT D.—Quantity and cost of native prisoners' subsistence at Albay for the fiscal year ending June 30, 1905.

	January 5 and 11, 1905.		March 3, 1905.		April 7, 1905.		May, 1905.	
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.
Bacon..... pounds.	1,200	P 329.74			998	P 354.29	2,608½	P 912.98
Beef, corned..... do.	6,900	1,981.80			9,248	2,030.19	a 195	2,322.00
Bread, hard..... do.	3,000	392.04						
Ginger root..... do.	337½	27.00	350	P 28.00	460	39.20	644	51.52
Mangoes..... do.	2,000	100.00	300	18.00	3,840	192.00	4,000	200.00
Rice..... do.	28,945	1,124.96	18,015	702.58	23,672	923.21	30,968	1,232.53
Potatoes..... do.	1,900	58.90	1,000	39.00			4,000	150.00
Sugar..... do.	900	81.90	1,200	99.46	1,500	111.83	2,100	246.75
Salt..... do.	450	4.90	1,200	12.00	1,500	15.00	516	5.16
Tomatoes..... cases.	11	42.84	25	144.00	33	165.00	18	94.50
Flour..... pounds.			15,000	768.00	19,500	998.40	12,900	725.63
Onions..... do.			1,000	60.00			4,060	202.50
Pepper..... do.			12	3.60	12	3.60	b 32	3.20
Salmon..... cases.			210	2,015.00	240	2,280.00		
Vinegar..... gallons.			10	5.50	10	5.50	15	18.66
Hops..... pounds.							60	19.20
Malt..... do.							50	10.00
Total.....		4,144.08		3,875.14		7,118.22		6,200.63
Total rations.....	16,000		14,910		19,040		26,800	

a Cans.

b Bottles.

Total number of rations.....	74,780
Total value of rations.....	P 21,888.07
Average cost per ration.....	P 0.284

EXHIBIT E.—Quantity and cost of native prisoners' subsistence at Camp Overton, Mindanao, for the fiscal year ending June 30, 1905.

	February 24 and 25, 1905.		March 7 and 25, 1905.	
	Quantity.	Cost.	Quantity.	Cost.
Beef, corned.....pounds.	6,024	₱ 1,350.44	6,888	₱ 1,865.50
Flour.....do.	10,000	512.00	25,000	128.00
Ginger root.....do.	250	20.00	610	48.80
Mongos.....do.	2,000	100.00	2,880	144.00
Pepper.....do.	8	2.40	20	6.00
Rice.....do.	12,220	476.58	30,186	1,177.26
Salt.....do.	800	8.00	2,000	20.00
Sugar.....do.	800	56.64	2,000	149.10
Tomatoes.....cases.	16	77.60	47	246.75
Vinegar.....gallons.	10	5.50	30	16.50
Onions.....pounds.			1,080	54.00
Salmon.....cases.			176	1,672.00
Total.....		2,612.16		6,679.91
Total rations.....	10,000		24,970	

	April 8, 1905.		May, 1905.		June, 1905.	
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.
Beef, corned.....pounds.	9,312	₱ 2,619.00	^a 174	₱ 1,572.75	^a 163	₱ 2,200.50
Flour.....do.	15,000	768.00			272	13.93
Ginger root.....do.	360	28.80	380	30.40	390	31.20
Mongos.....do.			3,000	150.00	3,000	150.00
Pepper.....do.	25	7.50	^b 36	3.60	^b 37	3.70
Rice.....do.	17,822	695.06	30,521	1,214.74	30,928	1,313.96
Salt.....do.	1,200	12.00	1,220	12.20	1,225	12.25
Sugar.....do.	1,200	89.46	1,220	90.95	1,225	143.94
Tomatoes.....cases.	50	250.00	26	136.50	26	130.00
Vinegar.....gallons.	50	27.50			464	37.20
Onions.....pounds.			2,160	108.00	2,260	113.00
Salmon.....cases.			35	297.50	37	314.50
Bacon.....pounds.			905	316.93	20	6.08
Hops.....do.			60	19.20	60	19.20
Malt.....do.			50	10.00	50	10.00
Potatoes.....do.			2,000	78.00	2,000	78.00
Total.....		4,497.32		4,040.77		4,577.46
Total rations.....	15,240		15,240		15,690	

^a Cans.^b Bottles.

Total number of rations.....	81,140
Total value of rations.....	₱ 22,407.00
Average cost per ration.....	₱ 0.2764

EXHIBIT F.—Quantity and cost of native prisoners' subsistence at Fort McKinley, Rizal, and the average cost per day for the fiscal year ending June 30, 1905.

	April, 1905.		May, 1905.		June, 1905.	
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.
Beef, fresh.....pounds.	3,225	₱ 451.50	6,975	₱ 976.50	6,750	₱ 945.00
Flour.....do.	5,160	264.19	11,160	571.39	10,900	552.96
Ginger root.....do.	285	22.80	350	28.00	243	19.44
Mongos.....do.	1,230	61.50			100	5.00
Onions.....do.	600	30.00	1,350	67.50	1,020	81.00
Pepper.....bottles.	3	.30	15	1.50	14	1.40
Potatoes.....pounds.	700	27.30	4,900	191.10	3,200	124.80
Rice.....do.	11,400	467.40	13,950	558.00	3,950	163.14
Salmon.....cases.	2	18.50				
Salt.....pounds.	912	9.12	1,120	11.20		
Sugar.....do.	912	67.99	1,120	131.60	371	43.59
Tomatoes.....cases.					34	17.50
Total.....		1,420.60		2,536.79		1,953.83
Total rations.....	7,103		13,500		9,769	

Total number of rations.....	30,372
Total value of rations.....	₱ 5,911.22
Average cost per ration per day.....	₱ 0.195

Quantity and cost of native prisoners' subsistence at Mariveles for the fiscal year ending June 30, 1905.

	April, 1905.		May, 1905.	
	Quan- tity.	Cost.	Quan- tity.	Cost.
Beef, corned.....pounds..	490	₱ 95.94	a 19	₱ 128.25
Cream.....cases..	15	135.00		
Eggs.....number..	500	12.00		
Ginger root.....pounds..	25	2.00	24	1.92
Mongos.....do..	200	10.00		
Oatmeal.....do..	60	12.00		
Pepper.....do..	4	1.20	b 4	.40
Rice.....do..	1,500	58.50	1,617	64.68
Salt.....do..	80	.80	80	.80
Soda crackers.....cases..	1	17.00		
Sugar.....pounds..	180	13.42	80	9.40
Onions.....do..			200	10.00
Potatoes.....do..			200	7.80
Total.....		357.86		223.25
Total rations.....	980		1,000	

a Cans.

b Bottles.

Total number of rations..... 1,980
Total value of rations..... ₱ 581.11

EXHIBIT G.—*Quantity and cost of native prisoners' subsistence at Inhuít Settlement, Paragua, for the fiscal year ending June 30, 1905.*

	March 1 and 21, 1905.		April 11 and 28, 1905.		May, 1905.		June, 1905.	
	Quan- tity.	Cost.	Quan- tity.	Cost.	Quan- tity.	Cost.	Quan- tity.	Cost.
Beef, corned.....pounds..	1,200	₱ 301.50	14,400	₱ 2,956.68	a 100	₱ 1,012.50		
Ginger root.....do..	300	24.00	400	32.00	500	40.00		
Mongos.....do..	900	45.00	1,800	90.00	5,000	250.00		
Onions.....do..	760	38.00	900	45.00	1,000	50.00		
Pepper, bottles and pounds.....	10	3.00	29	7.70				
Rice.....pounds..	23,103	901.01	84,641	3,465.14				
Salmon.....cases..	80	780.00	97	904.00				
Salt.....pounds..	1,200	12.00	3,600	36.00				
Sugar.....do..	800	56.64	3,600	268.38			200	₱ 23.50
Tomatoes.....cases..	25	125.00	120	600.00				
Vinegar.....gallons.	5	2.75			50	27.50		
Beans, navy.....pounds..			95	7.60				
Cream.....cases..			1	9.00	2	18.00	4	36.00
Lard.....do..			1	13.50				
Hops.....pounds..			60	19.20				
Malt.....do..			50	10.00				
Oatmeal.....do..			60	12.00			120	24.00
Potatoes.....do..			1,000	39.00	1,000	39.00		
Bacon.....do..					2,488	870.80		
Total.....		2,271.90		8,515.20		2,307.80		83.50
Total rations.....	11,760		57,750		11,589		417	

a Cans.

Total number of rations..... 81,516
Total value of rations..... ₱ 13,178.40
Average cost per ration..... ₱ 0.1616

EXHIBIT H.—Quantity and cost of American prisoner's subsistence at Inhuit Settlement, Paragua, for the fiscal year ending June 30, 1905—Continued.

	March 1 and 21, 1905.		April 11, 1905.	
	Quantity.	Cost.	Quantity.	Cost.
Beans, white..... pounds.	30	P 2.40	15	P 1.20
Coffee..... do.	10	3.36	5	1.68
Cream..... cases.	1	4.50	1	2.25
Oatmeal..... pounds.	10	2.00	5	1.00
Sugar..... do.	40	2.98	20	1.49
Tea..... do.	2	1.78	1	.89
Dried fruit..... do.			5	.83
Total.....		17.02		9.34
Total rations.....	60		30	
Total number of rations.....				90
Total value of rations.....				P 26.36
Average cost per ration.....				P 0.2928

SUMMARY.—Total cost and number of rations furnished under separate divisions of prisoners and to settlements and convict camps for the fiscal year ending June 30, 1905.

	Rations.	Cost.
Prisoners in the hospital.....	32,582	P 11,201.60
Native prisoners at Malahi Island.....	25,472	6,682.90
Native prisoners at Camp Overton, Mindanao.....	81,140	22,407.00
Native prisoners at Albay.....	74,750	21,338.07
Native prisoners at Fort McKinley, Rizal.....	30,372	5,911.22
Native prisoners at Mariveles.....	1,980	581.11
American prisoners at Inhuit Settlement, Paragua.....	90	26.36
Native prisoners at Inhuit Settlement, Paragua.....	81,516	13,178.40
American prisoners at Billbid Prison, Manila.....	38,543	15,126.98
Native prisoners at Billbid Prison, Manila.....	1,385,383	223,394.08
Total.....	1,751,828	319,847.72

Average cost per ration, P 0.1725.

EXHIBIT I.—Quantity and cost of subsistence stores furnished by depot commissary for native military prisoners at Malahi Island for the fiscal year ending June 30, 1905.

[Values in United States currency unless otherwise indicated.]

	November, 1904.		December, 1904.		January, 1905.		February, 1905.	
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.
Beef, fresh..... pounds.	1,559½	\$101.35	1,380	\$89.70	1,349½	\$87.70	1,890	\$122.85
Bacon..... do.	440½	54.16	384	64.62	385	51.21	540	74.20
Flour..... do.	1,436	30.98	876	18.83	856½	19.70	1,800	41.22
Hard bread..... do.	50	2.97						
Rice..... do.	3,715	68.73	3,285	60.77	3,211½	61.82	4,500	86.63
Potatoes..... do.	1,195	29.88	1,051	26.28	1,028½	25.71	1,441	36.03
Onions..... do.	291	8.58	263	7.70	256	7.55	359	10.59
Coffee..... do.	185½	26.93	164½	29.57	160½	24.89	225	33.41
Sugar..... do.	371½	11.25	328½	9.95	321½	9.73	450	14.58
Vinegar..... gallons.	5½	.99	6½	1.17	6½	1.08	9	1.51
Salt..... pounds.	118	2.07	105	1.44	102	1.28	144	1.80
Pepper..... do.	34	.86	3½	.77	3	.72	4½	1.08
Soap..... do.	118	5.02	105	4.46	102	4.34	144	6.12
Matches..... boxes.	66	.10	40	.06	128	.20	100	.29
Flour, 50-pound special bag, pounds.			438	10.97	428	10.35		
Beef, corned..... No. 2 tins.								
Salmon..... pounds.								
Beef, stew..... cans.								
Total.....	2,972	a 343.87	2,628	a 326.35	2,569	308.28	3,600	430.31
Interest, 10 per cent.....		34.39		32.64		30.63		43.03
Total in United States currency.....		378.26		358.99		338.91		473.34
Total in Philippine currency.....		756.52		717.98		673.82		946.68

aGold.

EXHIBIT I.—Quantity and cost of subsistence stores furnished by depot commissary for native prisoners at Malaki Island for the fiscal year ending June 30, 1905—Continued.

	March, 1905.		April, 1905.		May, 1905.		June, 1905.	
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.
Beef, fresh..... pounds.	1,905½	\$123.87	1,736½	\$112.86	1,701½	\$110.61	1,620½	\$105.35
Bacon..... do.	545	74.07	505	67.17	493	62.61	474½	52.38
Flour..... do.	1,015	23.24	1,084½	24.84	1,034½	23.60	791	17.80
Hard bread..... do.			50	2.97	200	11.72	100	5.86
Rice..... do.	4,538½	87.37	4,251½	76.74	4,383½	79.13	3,955	71.39
Potatoes..... do.	1,452½	36.31	1,380½	34.01	1,403½	35.09	1,245	31.13
Onions..... do.	363	10.71	340	10.03	350	10.33	310	9.15
Coffee..... do.	226½	35.74	212½	31.35	219½	34.52	197½	29.66
Sugar..... do.	453½	14.71	425½	15.18	438½	15.65	395½	14.12
Vinegar..... gallons.	9	1.51	8½	1.45	8½	1.47	7½	1.30
Salt..... pounds.	145	1.81	136	1.70	140½	1.89	126½	1.42
Pepper..... do.	4½	1.08	4½	1.02	4½	1.06	3½	1.02
Soap..... do.	145	6.16	136	5.78	140½	5.96	126½	5.48
Matches..... boxes.	80	.23	120	.36	40	.12	60	.18
Flour, 50-pound special bag, pounds.	800½	20.41	566	14.43	519	13.23	691	17.34
Beef, corned..... No. 2 tins.			19	3.96	48	10.00		
Salmon..... pounds.					45	3.83		
Beef, stew..... cans.							15	5.40
Total.....	3,631	437.22	3,401	403.85	3,507	420.91	3,164	368.88
Interest, 10 per cent.....		43.72		40.39		42.09		36.89
Total in United States currency.....		480.94		444.24		463.00		405.77
Total in Philippine currency.....		961.88		888.48		926.00		811.54

Total value of rations..... ₱ 6,682.90
 Total number of rations..... 25,472
 Average cost per ration..... ₱ 0.262

EXHIBIT J.—Quantity of subsistence stores furnished by depot commissary for American military prisoners for the fiscal year ending June 30, 1905.

	1904.						1905.			
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April and May.
Beef, fresh..... pounds.	487	497	648	565	525	540	545	406	402	815
Bacon..... do.	123	126	42	144	135	141	138	105	102	192
Flour..... do.	623	637	647	724	675	698	697	523	515	961
Beans..... do.	42	42	42	48	45	45	45	36	33	21
Rice, ration No. 1..... do.	27	28	29	32	30	32	32	22	23	42
Potatoes..... do.	444	454	461	516	480	500	500	373	368	664
Tomatoes..... cans.	55	56	57	64	60				45	
Dried fruits..... pounds.	55	56	57	64	60	62	62	46	45	85
Coffee, roasted and ground..... do.	44	45	46	51	48	50	50	33	36	98
Sugar..... do.	110	113	115	129	120	124	124	93	91	170
Vinegar..... gallons.	2½	2½	2½	3½	3	3	3	2½	2½	4
Pickles..... do.	2½	3	3	3½	3	3½	3½	2½	2½	4
Soap..... pounds.	22	22	15	13	12	25	25	10	18	32
Salt..... do.	22	22	23	25	24	25	25	18	18	32
Pepper..... do.	1½	1½	1½	1½	1½	1½	1½	1½	1	2
Soap, Castile..... do.			4	6	6			4		
Onions..... do.						120	120	92		166
Tea..... do.								1		
Beef, stew..... cans.										12
Total rations.....	554	556	575	644	600	620	620	465	458	854

Total number of rations, 5,956.

EXHIBIT K.—Quantity of subsistence stores furnished by depot commissary for native military prisoners for the fiscal year ending June 30, 1905.

	1904.						1905.			
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April and May.
Beef, fresh.....pounds..	886	767	981	744	76	201	272	274	307	613
Bacon.....do.....	85	85		80	8	18	25	26	30	120
Salmon.....do.....	255	255	244	250	24	54	75	75	90	90
Flour.....do.....	845		817	839	75		256	258	294	610
Rice, ration No. 1.....do..	2,113	2,131	2,042	2,097	187	470	641	646	736	1,526
Potatoes.....do.....	507	511	491	447	45	114	154	156	178	339
Onions.....do.....	338	256	326	296	30	74	102	102	116	226
Coffee, roasted and ground.....do..	105	106	102	104	9½	21	32	32	37	76
Sugar.....do.....	211	212	204	209	19	42	64	64	74	152
Vinegar.....gallons..	4½	4½	4	4	0½	0½	1½	1½	1½	3
Soap.....pounds.....	68	68	65	67	6	15	20	20	23	48
Salt.....do.....	68	68	65	67	6	15	20	20	23	48
Pepper.....do.....	2	2	2	2	0½	0½	0½	0½	0½	1½
Beef, stew.....cases..		43		a 240						50
Bread, hard.....pounds..		852				188				
Total rations.....	1,691	1,705	1,634	1,678	150	376	513	517	599	1,221

a Pounds.

Total number of rations, 10,074.

EXHIBIT L.—Condition of prisoners' deposit funds: amounts on hand July 1, 1904, amounts received and expended during the year, and balance on hand June 30, 1905.

Period.	United States currency.	Mexican currency.	Philippine currency.
On hand July 1, 1904.....	\$632.58	\$164.01	₱ 1,563.00
Received July 1 to August 17, 1904.....	91.58		
Received July 1, 1904, to May 27, 1905.....		938.33	
Received July 1, 1904, to June 30, 1905.....			9,349.01
Total receipts.....	724.16	1,102.34	10,912.01
Total disbursed and refunded during the period from—			
July 1 to September 17, 1904.....	724.16		
July 1, 1904, to May 27, 1905.....		1,102.34	
July 1, 1904, to June 30, 1905.....			8,088.855
Balance on hand June 30, 1905.....			2,823.155
	724.16	1,102.34	10,912.01

Health statistics.

HOSPITAL A.

	Americans. male.	Filipinos.		Recov- ered.	Died.
		Female.	Male.		
Infectious diseases:					
Chicken pox.....			63	63	
Epidemic cerebro-spinal meningitis.....			8	2	6
Influenza.....	2			2	
Measles.....			4	4	
Tuberculosis.....			255	(a)	160
General diseases:					
Beriberi.....			45	30	15
Malarial fever—					
Intermittent.....			325	324	1
Remittent.....			50	46	4
Cachexia.....	13		12	23	2
Morphinism (Chinos).....			8	8	
Furunculosis.....	1			1	
Rheumatism, acute, articular.....	2		5	7	

a See tabulated report.

Health statistics—Continued.

HOSPITAL A.

	Ameri- cans, male.	Filipinos. Female. Male.	Recov- ered.	Died.
General diseases—Continued.				
Heat exhaustion.....		1	1	
Syphilis.....		1	3	4
Uremia.....			2	1
Senile debility.....			5	3
Trichinosis, multiple abscesses.....			3	3
Lumbago.....	1		1	
Diseases of respiratory system:				
Asthma, bronchial.....			7	7
Abscess of lung.....			1	1
Bronchitis, acute.....			19	19
Pneumonia--				
Lobar.....		256	182	74
Lobular.....		1	1	
Pulmonary infraction.....			5	5
Pulmonary edema.....			2	1
Hemoptysis, traumatic.....				
Pulmonary congestion.....	1		5	6
Empyema, left pleural sac.....			2	2
Epistaxis.....			1	1
Pleurisy, acute.....	1		1	1
Laryngitis, acute.....	4		2	6
Edema of trachea.....	1		1	
Diseases of circulatory system:				
Endocarditis, chronic.....		2	1	1
Pericarditis, acute.....		1		1
Diseases of gastro-intestinal system:				
Pharyngitis, acute.....	1			1
Appendicitis.....			2	2
Gastritis, acute.....	2		1	3
Gastric indigestion, acute.....	1			1
Gastric ulcer.....	1		3	3
Gastro-enteritis, acute.....			5	2
Fecal impaction.....			51	51
Enteritis, acute.....			16	16
Colitis, chronic catarrhal.....	1			1
Intestinal indigestion, acute.....	1		4	5
Gastritis, chronic, alcoholic.....	1			1
Intestinal amebiasis.....	14		303	267
Intestinal parasitism, nematodes.....	1		3	4
Intestinal and hepatic amebiasis.....			1	1
Peritonitis--				
Acute, simple (fish bones perforating).....			1	1
Acute, purulent.....			1	1
Uncinariasis.....	2		6	8
Diseases of the genito-urinary system:				
Urethritis, gonorrheal.....	2			2
Orchitis, gonorrheal.....	4		6	10
Dysmenorrhea, acute.....		2		2
Gonorrheal lymphangitis.....	1			1
Inguinal adenitis.....	2		1	3
Abortion, threatened.....		2		2
Nephritis--				
Acute interstitial.....	1		1	2
Chronic interstitial.....	1		9	10
Acute parenchymatous.....	2		3	4
Chronic parenchymatous.....			8	6
Gonorrheal urethritis, cystitis, orchitis, and pyelitis.....	1			1
Mammitis.....		1		1
Pregnancy, delivered.....		1		1
Diseases of the nervous system:				
Alcoholic neurosis.....	1			1
Epilepsy.....			2	2
Neuralgia, facial.....	1			1
Delirium tremens.....	2			2
Alcoholic paresis.....	1			1
Neurasthenia.....	4			4
Paretic dementia and chronic nephritis.....			1	1
Diseases of eye, ear, and skin:				
Conjunctivitis, purulent (Week's bacillus).....			15	15
Corneal ulcers (Week's bacillus).....			13	13
Abscess, anterior chamber.....			6	6
Iritis, acute.....			3	3
Gonorrheal conjunctivitis.....			8	8
Conjunctivitis, traumatic.....	1			1
Paralysis muscles accommodation.....	1			1
Otitis media, acute, purulent.....	1		1	2
Tinea circinata, general.....			1	1

Health statistics—Continued.

HOSPITAL A.

	Ameri- cans, male.	Filipinos.		Recov- ered.	Died.
		Female.	Male.		
Surgical diseases and injuries:					
Tubercular osteitis and dermatitis of forearm, amputation at elbow.....			1	1	
Hydrocele, old indurated (exsection of tunic).....			19	19	
Gangrene, finger, amputation.....			1	1	
Prolapsus of rectum, dissection hemorrhoidal zone.....	1				1
Sequestrotomy of radius, old gunshot wound.....			1	1	
Sequestrotomy of femur, old gunshot wound.....			1	1	
Hernia, inguinal, simple (a).....			14	14	
Herniotomy (b) strangulated.....			1	1	
Abscess tonsil and subalveolar region (incised).....			1	1	
Cerebral concussion.....			1	1	
Contusion of ankle.....	1			1	
Contused and lacerated wound, scalp.....			1	1	
Internal urethrotomy, urethral stricture.....	3		1	4	
Carcinoma, testicles, castration.....			1	1	
Deformity penis (correction).....			1	1	
Osteo-sarcoma thigh and general millary tuber- culosis, amputation at hip joint.....			1		1
Paraphymosis, circumcision.....	1			1	
Contusion of foot and ankle.....	1			1	
Fracture of neck of femur.....			1	1	
Luxation of humerus.....			1	1	
Osteo-sarcoma, left inferior maxilla, excision.....			1	1	
Ischio-rectal abscess.....			5	5	
Cellulitis—					
Hand.....			1	1	
Face.....			3	3	
Internal hemorrhoids, hemorrhoidectomy.....	2		2		
Crush of fingers, amputation.....			2	2	
Puncture of wounds of foot.....	1		1	2	
Carcinoma of bladder and mesentery (ether pneumonia).....			1		1
Carcinoma of pectoral muscles and axillary glands.....			1	1	
Abscess thigh.....			3	3	
Gun shot wounds:					
Compound comminuted, tibia and fibula (osteo- raphy).....			1	1	
Compound comminuted fracture humerus.....			1	1	
Compound comminuted fracture lower end femur.....			1	1	
Penetrating wounds of head and face.....			1	1	
Penetrating wounds of body.....			8	8	
Penetrating wounds of foot and hand.....			1	1	
Penetrating wounds of thigh and leg.....			2	2	
Penetrating wounds of hands and arms.....			1	1	
Penetrating wounds of leg, thrombosis popliteal artery, gangrene, amputation lower third thigh.....			1	1	
Hand, arm, and chest.....			1	1	
Thigh, knee, and buttock.....			1	1	
Thigh.....			2	2	
Face and breast.....			1	1	
Back and hand.....			1	1	
Both knees and breast.....					
Arm, thigh, groin, and buttock.....			1	1	
Arm, thigh, calf, and foot.....			1	1	
Knee and hand.....					
Ankle and pelvis.....			1	1	
Thighs, testicles, arm, and compound fracture clavicle.....			1	1	
Knee and calf.....			1	1	
Abdomen.....					1
Multiple wounds, body and head.....			41	24	17
Multiple wounds, chest and abdomen.....			1		1
Infected wounds:					
Leg and foot.....			2	2	
Hand.....			2	2	
Axilla.....			1	1	
Incised wounds, arm.....			1	1	
Deformity toe, amputation.....	1				
Elephantiasis, scrotum and testicles (amputation).....			1	1	
Pleural fistula, tubercular, dissection and closure.....	1				
Tubercular osteitis of sternum (sequestrotomy).....	1			1	
Purulent osteitis of inferior maxilla (curetage).....					
Cerebral concussion, lacerated wounds of scalp.....			1	1	
Dermoid cyst (sternal region), excised.....			1	1	
Rupture liver and spleen (crush).....			1	1	
Lacerated wounds of hand.....			1	1	

Health statistics—Continued.

HOSPITAL A—Continued.

	Ameri- cans, male.	Filipinos.		Recov- ered.	Died.
		Female.	Male.		
Lacerated wounds of scrotum.....			1	1	
Suprapubic abscess.....			1	1	
Inguinal adenitis and bubo, incised.....	1		3	4	
Contusion of the lumbar region.....			1	1	
Contusion of the chest and thigh.....			1	1	
Fracture clavicle (reduced).....			1	1	
Elephantiasis of the leg and scrotum.....			1	1	
Incised wound of the head.....			1	1	
Ischio-rectal abscess (incised).....			1	1	
Paraphimosis and edema scrotum circumcision.....	2		1	3	
Urethral structure (internal urethrotomy).....	1			1	
Tropical ulcer, foot.....			1	1	
Abscess:					
Arm (incised).....			1	1	
Hip (incised).....			1	1	
Jaw (incised).....			1	1	
Pelvis (incised).....		1	1	2	
Thigh (incised).....			1	1	
Crush of the fingers (amputation).....			1	1	
Incised wounds of head.....			1	1	
Incised wounds of hand.....			1	1	
Minor surgical diseases treated in clinical ward of Hospital A, the men being returned to quarters in- stead of being kept in hospital after treatment:					
Abscess—					
Body.....			200	200	
Hand and arm.....			230	230	
Leg and thigh.....			168	168	
Foot.....			162	162	
Inguinal buboes (incised).....			525	525	
Burns of hand and face.....			195	195	
Carbuncles of neck and face.....			140	140	
Chancroids.....			161	161	
Conjunctivitis (Week's infection).....			673	673	
Dhobie Itch.....			426	426	
Impetigo.....			784	784	
Eczema, hand and body.....			89	89	
Furuncles.....			115	115	
Fistulae in ano.....			267	267	
Gonorrheal urethritis.....			528	528	
Cellulitis—					
Hand.....			320	320	
Arm.....			78	78	
Leg and foot.....			167	167	
Necrotic teeth (extracted).....			447	447	
Ochitis, acute.....			22	22	
Otagia (medicinal treatment).....			468	468	
Ulcers—					
Varicose, leg.....			116	116	
Bucal (nonspecific).....			48	48	
Bucal (specific).....			150	150	
Leg, syphilitic.....			178	178	
Tubercular.....			231	231	
Leg, traumatic.....			416	416	
Phymosis, circumcision.....			19	19	
Wounds—					
Abrased, hands and arm.....			541	541	
Contused, head and face.....			414	414	
Old gunshot, body and limbs.....			381	381	
Incised, hand and arm.....			452	452	
Infected, hand and arm.....			416	416	
Infected, foot and leg.....			323	323	
Lacerated, hand and arm.....			226	226	
Punctured, foot.....			213	213	
Internal hemorrhoids (operated).....			21	21	

Prescriptions compounded in drug room, 10,794.

Health statistics—Continued.

HOSPITAL B.

Prisoner's number and class.	Weight and result of microscopical examination of sputum.				Disposition.	Time in hospital.
	On admission to hospital.		On date of discharge, death, or remaining June 30, 1905.			
	Weight.	Microscopical examination.	Weight.	Microscopical examination.		
FIRST STAGE.						
6331-1 C	97	Positive	117	Negative	Discharged	44 months.
1117-1 P	94	do	854	Positive	Pardoned	4 months.
1593-1 P	105	do	77	Negative	Remaining	2 months.
4591-3 P	844	do	105	do	do	54 months.
3436-1 P	90	do	109	do	do	6 months.
3547 Det	85	do	125	do	Discharged	54 months.
2947-1 C	100	do	118	do	do	3 months.
7315-2 C	101	do	102	do	Pardoned	2 months.
1139-1 P	116	do	103	Positive	Remaining	7 months.
58-1 P	120	do	1254	do	Pardoned	64 months.
3612-1 C	103	do	113	do	Remaining	34 months.
3764-1 P	964	do	82	do	Died	4 months.
5081-1 C	964	do	98	do	Pardoned	5 months.
4420-3 P	106	do	1244	Negative	Discharged	Do.
3190-2 P	88	do		Remaining	do	15 days.
4116-1 P	864	do	115	Negative	do	6 months.
4422 Det	884	do	123	do	do	7 months.
3396-1 P	122	do	1294	Positive	do	Do.
2990-1 P	120	do	1214	Negative	do	5 months.
8282-2 C	1104	do	1354	do	Discharged	7 months.
524-1 C	96	do	1144	do	Remaining	6 months.
3142-1 P	113	do	122	do	do	5 months.
3219 Det	109	do	1304	Positive	Executed	3 months.
4951-3 P	86	do	1074	Negative	Remaining	7 months.
4181-2 P	894	do	90	do	do	2 months.
2947-1 P	95	do	924	Positive	do	7 months.
7296-2 P	132	do	1364	Negative	Discharged	24 months.
4360-1 P	103	do	125	do	Remaining	2 months.
3766-1 P	97	do	117	do	Discharged	24 months.
3694 Det	104	do	110	do	Remaining	7 months.
3161-1 P	86	do	1204	do	Discharged	5 months.
2990-1 P	93	do	119	do	do	44 months.
2990-1 P (readmitted).	101	do	874	Positive	Remaining	3 months.
4021-1 C	924	do	126	Negative	Discharged	5 months.
2081-P	87	do	115	do	do	6 months.
1357-1 P	109	do	119	do	Remaining	64 months.
3050 Det	84	do	1104	do	Discharged	5 months.
4182-1 P	76	do	121	do	do	44 months.
3463 Det	83	do	117	do	do	7 months.
4431-1 C	116	do	1174	Positive	do	3 months.
4429-1 C	994	do	102	Negative	do	2 months.
2560-1 P	133	do	116	Positive	Remaining	5 months.
SECOND STAGE.						
4493-2 P	84	Positive	97	Negative	Remaining	44 months.
1796-1 P	1034	do	86	Positive	Died	14 months.
7283-2 C	864	do	75	do	do	1 month.
2225-1 P	82	do	784	do	do	3 months.
1450-1 P	102	do	90	do	Remaining	5 months.
4257-2 P	101	do	1284	Negative	Discharged	7 months.
3742-1 C	77	do	120	do	do	Do.
1123-2 P	107	do	1214	do	Remaining	6 months.
64-1 P	1054	do	105	Positive	do	Do.
1983-1 P	92	do	96	do	do	2 months.
4687 Det	974	do	104	Negative	do	14 months.
3540-2 P	924	do	81	do	Died	3 months.
3408-1 P	77	do	78	Positive	Remaining	2 months.
2156-1 P	98	do	78	do	Died	14 months.
2018-1 P	110	do	109	Negative	Remaining	5 months.
4023-3 C	83	do	111	do	do	7 months.
1574-1 P	984	do	1044	Positive	do	24 months.
4221 Det	105	do	1324	Negative	Discharged	44 months.
1662-1 P	96	do	99	Positive	Pardoned	4 months.
4362-2 P	95	do	105	Negative	Discharged	7 months.
2291-1 P	88	do	96	Positive	Remaining	2 months.
1367-1 P	103	do	131	Negative	Discharged	7 months.
4417-3 P	824	do	844	Positive	Remaining	64 months.
2121-1 P	73	do	78	do	do	6 months.

Health statistics—Continued.

HOSPITAL B—Continued.

Prisoner's number and class.	Weight and result of microscopical examination of sputum.				Disposition.	Time in hospital.
	On admission to hospital.		On date of discharge, death, or remaining June 30, 1905.			
	Weight.	Microscopical examination.	Weight.	Microscopical examination.		
SECOND STAGE—continued.						
	<i>Pounds.</i>		<i>Pounds.</i>			
4948-3 P.	87	Positive	70	Positive	Died	3 months.
2580-1 P.	86	do	98	do	Remaining	2½ months.
2334-1 P.	89	do	71	do	Died	2 months.
4520-3 P.	73	do	100	Negative	do	6½ months.
857-1 P.	101	do	106	do	Died	3½ months.
1040-1 P.	104	do	96	Positive	do	2½ months.
1523-1 P (transferred to Mindanao).	104½	do	114	do	Discharged	1 month.
3188-3 P.	101	do	83	do	Died	Do.
3355-1 P.	105	do	90	do	Remaining	3 months.
2280-1 P.	84	do	66	do	Died	2 months.
1999-1 P.	84	do	81	Negative	do	1½ months.
2395-1 P.	83½	do	116	do	Remaining	7 months.
2049-1 P.	116	do	89½	Positive	Died	1½ months.
1137-1 P.	102	do	98	do	do	1 month.
1870-1 P.	85	do	85½	do	Remaining	Do.
3462-1 P.	100	do	96	Negative	do	3 months.
2773-1 P.	115	do	94	Positive	do	2½ months.
1098-1 P.	76	do	79	do	Pardoned	1 month.
2493-1 P.	104	do	98	do	Died	5 months.
4919-2 P.	93	do	115	Negative	Discharged	5½ months.
8210-1 C.	86	do	96½	do	Pardoned	5 months.
783-1 P.	101½	do	97½	Positive	Remaining	6½ months.
3496-1 P.	92½	do	95	Negative	do	7 months.
THIRD STAGE.						
3657 Det.	83	Positive	76	Positive	Died	2 months.
1522-1 P (transferred to Camp Overton).	87	do	89	do	Discharged	2 weeks.
3567 Det.	72	do	72	do	Died	1 day.
3703-1 P.	84½	do	78	do	do	10 days.
3338-1 P.	76	do	72	do	do	11 days.
2010-1 P.	83	do	80½	do	do	1 day.
2001-1 P.	90	do	73	do	do	1½ months.
3037-1 P.	82	do	76	do	do	3 weeks.
1159-1 P.	87	do	76	do	do	Do.
6339-2 C.	80	do	74	do	do	2 weeks.
3887-1 C.	87½	do	84	do	do	1 week.
4551-3 P.	68	do	67	do	do	2 days.
2904-1 P.	62	do	60	do	do	3 weeks.
4725-3 P.	95	do	81	do	do	Do.
Faustino Barber.	80	do	76	do	do	Do.
2031-1 P.	81½	do	76	do	do	2 weeks.
4143-1 C.	83	do	79	do	do	3 weeks.
3994-1 P.	75½	do	64	do	do	2 months.
2241-1 P.	77½	do	70	do	do	3 weeks.
3398-1 P.	82½	do	74	do	do	4 weeks.
4522-1 C.	93½	do	66	do	do	3 months.
4606-1 C.	73	do	67	do	do	3 weeks.
1661-1 P.	67	do			do	1 day.
3677-2 P.	68½	do			do	3 days.
2985-1 P.	65	do	68	Positive	Remaining	3 weeks.
2647-1 P.	80	do	80½	do	do	2 weeks.
2731-1 C.	67	do	64	do	Died	3 weeks.
496-1 P.	68	do	115½	Negative	Discharged	3 months.
2343 Det.	80½	do	81½	Positive	Remaining	10 days.
6373-1 C.	83	do	81	do	Died	3 weeks.
4136-2 P.	73	do	71	do	do	5 weeks.
746-1 P.	105	do	78	do	do	6 weeks.
3152-1 P.	86	do			do	1 week.
256-1 C.	74½	do			do	Do.
2461-1 P.	83	do			do	Do.
3144-1 P.	80	do			do	Do.
1973-1 P.	79	do			do	5 days.
2984-1 P.	72	do	66	Positive	do	1 month.
3057-1 P.	96	do	83	do	do	2 months.
4593-3 P.	90	do	88	do	do	16 days.

Health statistics—Continued.

HOSPITAL B—Continued.

Prisoner's number and class.	Weight and result of microscopical examination of sputum.				Disposition.	Time in hospital.
	On admission to hospital.		On date of discharge, death, or remaining June 30, 1908.			
	Weight.	Microscopical examination.	Weight.	Microscopical examination.		
THIRD STAGE—continued.	Pounds.		Pounds.			
3134-1 C.	75	Positive			Died	1 week.
3689-1 C.	64½	do.			do.	6 days.
3647-1 C.	72	do.			do.	1 week.
1388-1 C.	106½	do.	63	Positive	do.	4 months.
1096-1 P.	77	do.			do.	1 week.
Gallus Paulino.	64	do.	60	Positive	do.	1 month.
4540-3 P.	87	do.			do.	1 week.
826-1 P.	89½	do.			do.	Do.
4534-3 P.	78	do.			do.	2 weeks.
3636-2 P.	110	do.	103	Positive	do.	3 weeks.
3007-1 P.	82	do.	80	do.	do.	Do.
4526-3 P.	85½	do.	80½	do.	do.	2 weeks.
2283-1 P.	100	do.	86	do.	do.	1 month.
2945-1 C.	89	do.	77	do.	do.	2 months.
143-1 P.	69	do.			do.	1 day.
3859-1 P.	74	do.	69½	Positive	do.	2 months.
3817-1 C.	75	do.	72½	do.	do.	3 weeks.
4585-3 P.	79	do.	82	do.	do.	1 month.
4673-3 P.	78	do.			do.	1 week.
4369-1 P.	74	do.	69	Positive	do.	1 month.
3601-2 P.	110	do.	93	do.	do.	Do.
4276 Det.	120	do.	96	do.	do.	2 months.
3656-1 P.	74	do.	73	do.	Remaining	1 week.
3135-1 P.	68	do.	69½	do.	Died	3 weeks.
9399-2 C.	75	do.	76½	do.	Remaining	2 weeks.
2760-1 P.	82½	do.	80	do.	do.	Do.
209-1 P.	127	do.	120	do.	Died	3 weeks.
3509-1 P.	79	do.			do.	10 days.
2623-1 P.	81	do.	77	Positive	do.	3 weeks.
4121-1 P.	68	do.			do.	1 week.
4514-3 P.	77	do.	73	Positive	do.	2 weeks.
3138 Det.	73	do.			do.	1 day.
2562-1 P.	90½	do.			do.	1 week.
3874-1 P.	84½	do.	76	Positive	do.	1 month.
4425 Det.	80½	do.	68	do.	do.	2 months.
900-1 P.	97½	do.	94	do.	do.	6 weeks.
2091 Det.	95	do.	67	do.	do.	3 months.
2125-1 P.	114	do.	70	do.	do.	5 months.
1992 Det.	79	do.			do.	2 days.
Santos Graciano.	96	do.	81	Positive	do.	2 months.
3290-1 P.	85	do.			do.	1 week.
3270-1 P.	102	do.	71	Positive	do.	3 months.
4036-1 P.	65	do.			do.	1 week.
4519-1 C.	74	do.			do.	2 days.
4365 Det.	63	do.			do.	2 weeks.
3365-1 P.	70	do.			do.	5 days.
6962-2 C.	74	do.			do.	1 week.
3418-1 P.	68½	do.			do.	2 weeks.
2282-1 P.	96	do.	79	Positive	do.	1 month.
1743-1 P.	69	do.			do.	5 days.
2884-1 P.	81	do.	73	Positive	do.	1 month.
1054-1 P.	72	do.			do.	2 weeks.
4302-1 P.	80	do.	68	Positive	do.	6 weeks.
3695-1 P.	58½	do.			do.	1 week.

Health statistics—Continued.

CASES OF TUBERCULOSIS.

	Total cases.	Discharged.	Pardoned.	Executed.	Died.	Remaining in hospital.
First stage.....	42	16	4	1	1	20
Second stage.....	47	7	3		15	22
Third stage.....	94	2			86	6
Total.....	183	25	7	1	102	48
Hospital A.....	72				58	
Grand total.....	255				160	

During the year there were 255 cases, of which 160 died and 95 improved and are well on toward recovery. There were 72 cases previous to the opening of Hospital B, December 1, 1904. These 72 cases were treated at Hospital A and are not extended in tabulated form. Of them 58 died and 14 recovered.

Medical report from road camps at Albay.

	Cases.	Died.		Cases.	Died.
Dysentery:			Insect bites, centipedes.....	1	
Chronic.....	56	2	Lipoma, right groin.....	1	
Acute.....	27		Malarial fever:		
Diarrhea:			Tertian.....	30	
Acute.....	18		Malignant.....	5	
Chronic.....	5		Malingering.....	1	
Dysentery, amœbic.....	14	1	Paralysis, left arm.....	1	1
Beriberi.....	11	4	Pemphigus, acute.....	3	
Lacerated wounds of hand.....	1		Pleurisy, dry.....	1	
Acute orchitis.....	1		Retention of urine.....	1	
Acute rheumatism.....	1		Rheumatism, acute, muscular.....	3	
Pulmonary tuberculosis.....	18	4	Trachoma.....	1	
Abscess, foot.....	2		Pneumonia.....	1	1
Inguinal adenitis.....	1		Delusional insanity.....	1	
Abscess, knee.....	1		Sprain, ankle.....	1	
Acute bronchitis.....	8		Aortic insufficiency.....	1	1
Ephemeral fever.....	2		Acute gastritis.....	3	
Acute lumbago, left.....	1		Pemphigus contagiosa.....	1	
Malarial fever.....	1		Purulent conjunctivitis.....	2	
Ischio-rectal abscess.....	1		Concussion, brain.....	1	
Abscess, peritumoral.....	1		Sore feet.....	3	
Intestinal colic.....	2		Tropical ulcer.....	1	
Contusion, foot.....	1		Corneal ulcer.....	3	
Gunshot wound:			Tonsillitis.....	1	
Abdomen.....	2	2	Abscess, foot.....	1	
Head.....	1		Blind.....	1	
Arm and shoulder.....	2	1	Amputated arm.....	1	
Head, perforating.....	1	1			
Spine.....	1	1	Total.....	110	19

Medical report from Inhuit Settlement, Palawan.

	Cases.		Cases.
Abscess (?).....	2	Furuncle.....	2
Abscess of left foot.....	1	Gastritis, acute.....	1
Abscess of left buttock.....	1	Hemoptysis, tubercular.....	1
Abscess of right leg.....	1	Hemophis.....	1
Atrophy, acute, yellow.....	2	Inclosed wound.....	3
Beriberi.....	51	Infected wound.....	4
Bronchitis, acute.....	1	Malaria.....	628
Conjunctivitis, purulent.....	1	Myopia.....	1
Contused wound.....	1	Rheumatism.....	1
Carbuncle.....	2	Sarnas.....	2
Diarrhea.....	5	Senile debility.....	6
Dysentery.....	19	Sprain, severe.....	1
Eczema.....	1	Tuberculosis.....	6
Eye disease.....	1	Tropical ulcer.....	2

There were 45 deaths from December 1, 1904, to June 30, 1905, 22 of which were unspecified by native practitioners detailed previous to Doctor Madara's arrival.

The preceding incomplete list of diseases, with the undefined causes of deaths, was made out by the practicante detailed to the Settlement previous to the detail of Doctor Madara.

The following are hospital reports for the months of April, May, and June, 1905, made out and forwarded to this office by Dr. J. W. Madara, physician, Inhuit Settlement.

Hospital, Inhuit Settlement, Palawan, P. I.—Monthly report of sick and wounded.

APRIL.

Diseases.	Cases.	Died.	Recov- ered.	On sick report.
Adenitis, inguinal.....	1		1	
Beriberi.....	33	2		31
Conjunctivitis, purulent.....	2			2
Cystitis, acute.....	1		1	
Diarrhea, acute.....	3		3	
Dysentery:				
Acute.....	2		1	1
Acute and malarial cachexia.....	1	1		
Dysentery, chronic.....	4	1		3
Eczema, vesiculosum.....	2	1	2	
Febricula.....	1			1
Furuncles.....	1		1	
Hemorrhage, pulmonary.....	1			
Infected wounds.....	3		3	
Malaria.....	133		100	33
Myalgia, right foot and ankle.....	1			1
Necrosis of femur, lower third, right leg, caused by gunshot wound.....	1			1
Pulmonary congestion.....	1	1		
Scabies.....	3		3	
Senile debility.....	3	1		2
Suppurating cervical glands.....	1			1
Tuberculosis, pulmonary.....	2			2
Total.....	200	6	116	78

MAY.

Abscess, right leg, lower third.....	1			1
Beriberi.....	45	3		42
Beriberi and pulmonary tuberculosis.....	1	1		
Bronchitis, acute.....	1	1		1
Conjunctivitis, purulent.....	2			2
Contused wound, slight, left foot.....	1		1	
Dysentery:				
Acute.....	5			5
Chronic.....	2	1		1
Febricula.....	1		1	
General debility and septicemia (necrosis of femur).....	1	1		
Incised wound, slight, left foot.....	1			1
Infected wound, slight, left foot.....	1		1	
Malaria.....	149		107	42
Malarial cachexia.....	1	1		
Malaria and acute yellow atrophy.....	1	1		
Malaria and beriberi.....	2	1	1	
Myalgia, right foot and ankle.....	1			1
Senile debility.....	6	4	1	1
Suppurating cervical glands.....	1		1	
Tuberculosis, pulmonary.....	3	1	1	1
Total.....	226	14	114	96

JUNE.

Abscess:				
Left buttock.....	1			1
Right leg, lower third.....	1			
Beriberi.....	43	4	18	21
Bronchitis, acute.....	1		1	
Conjunctivitis, purulent.....	2		2	
Dysentery.....	6	2	1	3
Eczema.....	1		1	
Hemoptysis, tubercular.....	1	1		
Incised wound.....	1		1	
Infected wound.....	1		1	
Malaria.....	72		58	14
Malaria and beriberi.....	1		1	
Myalgia, right foot and ankle.....	1		1	
Senile debility.....	3	1		2
Sprains, severe.....	1			1
Tuberculosis.....	3	2		1
Total.....	139	10	86	43

The following is a general summary and totaling of the number of cases treated during the twelve months' period ending June 30, 1905:

	Ameri- cans, male.	Filipinos.		Recov- ered.	Died.
		Female.	Male.		
Infectious diseases.....	2		330	104	166
General diseases.....	16	11	460	452	25
Diseases of—					
Respiratory system.....	7		301	230	78
Circulatory system.....			3	1	2
Gastro-intestinal system.....	25		397	365	57
Genito-urinary system.....	14	6	28	46	3
Nervous system.....	9		3	11	1
Eye, ear, and skin.....	3		47	50	
Surgical diseases and injuries.....	10		67	77	2

Minor surgical diseases, 10,310.

Albay road camp: Construction gang of prisoners, 250 cases, 19 deaths. Inhult Settlement, Palawan, 748 cases, 38 deaths.

The following is the number of prisoners and the disease with which they suffered who were returned to Bilibid Prison for treatment:

	Cases.		Cases.
From Albay Road Camp:		From Fort William McKinley Road	
Beriberi.....	15	Camp—Continued:	
Corneal ulcer.....	8	Infected wound of the hand.....	4
Gunshot wounds.....	2	Infected wound of the foot.....	3
Intestinal amebiasis.....	44	Intermittent malarial fever.....	1
Intermittent malarial fever.....	1	Intestinal amebiasis.....	13
Pulmonary tuberculosis.....	31	Inguinal bubo.....	1
	101	Lobao-pneumonia.....	2
		Malingering.....	3
From Fort William McKinley Road Camp:		Pulmonary tuberculosis.....	7
Beriberi.....	29		
Fecal impaction.....	2	Total.....	65

APPENDIX F.

REPORT OF OFFICER IN CHARGE OF PORT WORKS.

DEPARTMENT OF COMMERCE AND POLICE,
OFFICE OF PORT WORKS,
SANTA LUCÍA BUILDING, MALECÓN DRIVE,
Manila, P. I., July 28, 1905.

SIR: I have the honor to submit my report of operations on improving the ports of the Philippine Islands for the fiscal year ending June 30, 1905.

IMPROVEMENT OF THE PORT OF MANILA AND PASIG RIVER.

This work is being done under an Act, No. 22, of the United States Philippine Commission, dated October 15, 1900, appropriating \$1,000,000 United States currency, for improving the port of Manila. By amendments to this Act, Acts Nos. 674, 1047, 1176, 1246, and 1342, authority has been given to incur additional obligations not exceeding \$3,398,000 United States currency.

Before describing the existing project it is deemed advisable to give a brief summary of the work done previous to American occupation.

The improvement of the port of Manila was begun in 1755. At that date the Pasig River emptied into Manila Bay at Fort Santiago, and what was called the port of Manila consisted of the portion of the river between its mouth and the sight of the present Bridge of Spain. A bar obstructed the entrance to the river which limited navigation to light bancas.

In that year were constructed two wooden jetties extending into the bay which caused the bar to recede, but also produced a large accretion to the shore of Manila Bay, especially north of the river, so that it became necessary to lengthen them from time to time. Stone quays were also built along the river banks, but of weak section, and having little depth along their fronts. There is also reported the construction of a basin on the right bank of the river, having a depth of 5 meters below mean tide.

In 1833 a dredge was purchased by the government and a narrow channel of 12 feet depth was maintained across the bar by dredging annually about 100,000 cubic meters of material.

Numerous projects have been submitted for the improvement of the port, but the first suggestion of the present outer harbor appears to have been made by Spanish military engineers, who proposed to construct a breakwater in the bay on which a fort could be located to protect the city in time of war and afford a refuge for the fleet. It is noted that this work will also be beneficial to the shipping interests of the city.

In 1867 there was established in the Philippine Islands a bureau of public works, to which was assigned among its other duties that of studying the improvement of the port of Manila. A preliminary project was submitted in 1876 by Señor D. Eduardo López Navarro, which received the approval of the Spanish Government in 1879 with certain modifications, which were referred back and forth between the home government and the colonial authorities until March 16, 1892, when the project was finally approved.

This project deals with the improvement of the outer harbor of the Pasig River and the esteros of the city.

The project for the outer harbor is shown in plan in an accompanying drawing (Plate 1).

The works projected had for their object the construction of, first, an ante porte 9 meters deep; second, two basins 8 meters deep each containing 180,000 square meters for large seagoing vessels; third, a basin 6 meters deep with an area of 215,000 square meters for vessels of the coasting trade; fourth, a canal of communication between this last basin and the Pasig River, 5 meters deep and 20 meters wide for the first 100 meters, over which it was proposed to construct a drawbridge, and 50 meters wide in the other 125 meters; and, fifth, an earth fill surrounding the basins on which warehouses were to be erected.

A shipyard for repairing all classes of vessels is also mentioned in the project, but not shown on the plans.

To accomplish these objects it was proposed to build: (a) A west breakwater beginning near the southern mole at the mouth of the Pasig River and extending S. 5° W. a distance of 675 meters, thence S. 26° W. 1,310 meters, thence due south 486.5 m. (b) an east breakwater starting near the present monument to Legaspi, and extending SW. $\frac{1}{4}$ W. 1,260 meters, and thence W. SW. 771.5 meters; (c) walls inclosing the various basins and canal; (d) to dredge the basins and canal to the depth proposed; and (e) to fill the space between the breakwater, basin walls, and the Plaza Santa Lucia with material thus obtained.

The breakwaters were to be constructed with a base of riprap to mean tide and a rubble masonry superstructure.

The riprap substructure was to be given an interior slope of 4 vertical to 5 horizontal, estimated as the natural slope the rock would take on being deposited. The exterior slope was to be 1 on 2 for the first alignment of the west breakwater, from 1 on 2 to 1 on 3 for the second alignment, and from 1 on 3 to 1 on 3 $\frac{1}{2}$ for the third; in the east breakwater from 1 on 2 for the first alignment, and from 1 on 2 to 1 on 2 $\frac{1}{2}$ for the second.

The masonry superstructure also varied in the various portions of the breakwater, having a height of 4.37 meters and top width of 1.5 meters in the first alignment of the west breakwater, a height of 5 meters and top width of 2.5 meters in the second, and a height of 6 meters and width of 3 meters in the third. The interior face of the parapet was to be vertical, the exterior face was to have a slope such as would increase the width of base five-tenths of a meter.

This wall was to be surmounted by a coping of cut stone 0.37 of a meter in height in the first alignment and 0.8 of a meter on the second and third.

As a further protection against wave action large concrete blocks were laid against the exterior slope of the parapet of the first alignment and heavy riprap proposed for the other two alignments, extending to a height of 2 meters above mean tide.

The dike was to end in a mole 33 meters in diameter, of concrete and rubble masonry founded on a riprap base, 3.5 meters below mean tide at its farther extremity, but to be protected from wave action by concrete blocks if in the judgment of the engineer in charge such protection was necessary.

The east breakwater was to be similarly constructed.

The walls of the basins were to have a foundation of riprap with a monolithic base of concrete in sacks, on which were to be deposited concrete blocks to mean tide, and above this elevation rubble masonry with a cut-stone coping. The top of the riprap foundation was to be on a level with the bottom of the various basins. The height of the walls varied from about 1 meter above mean tide in the canal to 3 meters in the ante port. These walls were also to be backed by a pile of riprap.

The estimated cost of the outer harbor was ₱5,000,000.

The project also contemplated maintaining a channel in the Pasig River and across its bar by dredging, the reconstruction of the quay walls along the river banks, and an improvement of the upper Pasig considered as an accessory to the harbor improvement as it afforded the most feasible method of transporting the rock required in the works.

A general improvement of the esteros within the city limits by dredging and construction of quay walls was also proposed.

Upon the approval of the provisional project, there was created by decree of January 2, 1880, the junta of the port of Manila, to generally supervise the work of improving the harbor and to administer the funds set aside for the purpose. These funds were principally derived from a duty on imports and exports, and a tonnage tax on vessels entering the port. These taxes originally were 2 per cent on imports, 1 per cent on exports, 20 centavos a ton on vessels navigating the high seas, and 10 centavos a ton on those engaged in the coasting trade, but were modified subsequently by various decrees, and other funds were set aside for works assigned to the junta, such as the construction of light-houses, and the building of the ayuntamiento.

The funds collected from 1880 to 1898 for these purposes were ₱11,155,873.70 $\frac{1}{2}$, of which ₱6,851,444.76 $\frac{1}{2}$ were available for the works of the port. The expenditures of the junta for the same period were ₱8,740,643.73 $\frac{1}{2}$, of which ₱6,707,219.76 $\frac{1}{2}$ were expended on the works of the port. Of this amount ₱3,586,406.63 $\frac{1}{2}$ were expended on the outer harbor, ₱1,828,600.64 $\frac{1}{2}$ on the Pasig River, and ₱653,738.15 $\frac{1}{2}$ on the esteros.

The balance, ₱638,477.33 $\frac{1}{2}$, represents concrete blocks constructed but not placed on the work, property at the various quarries, and the machinery and buildings belonging to the works of the port at the close of operations. This material greatly deteriorated during the suspension of operations.

The discrepancy between receipts and expenditures appears to arise from the use of certain of the funds for military purposes during the insurrection of 1896.

At the close of the Spanish régime, the first alignment of the west breakwater had been constructed. Of the remainder of the breakwater, 600 feet had been completed except the coping, 2,000 feet to within about 2 feet of the top of the rubble masonry wall;

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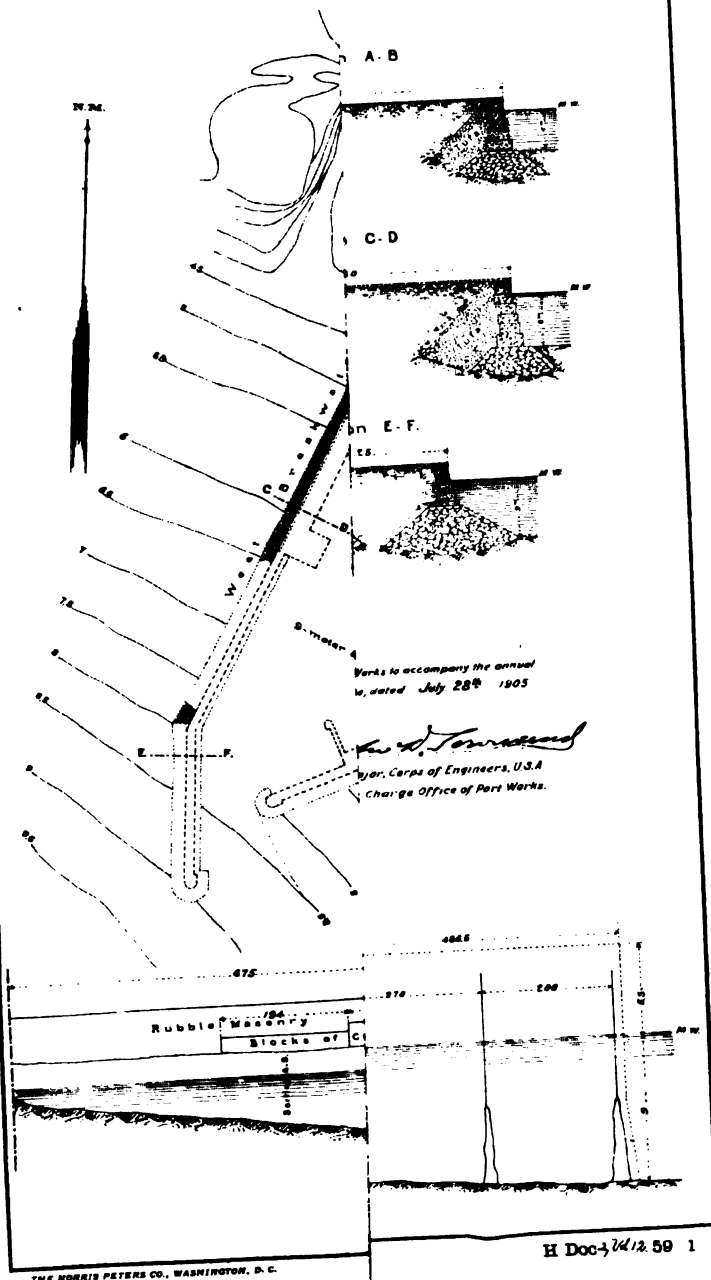
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CROSS SECTIONS

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for 1,700 feet the riprap foundation was in place, and portions of the rubble masonry wall built; for 1,500 feet the riprap foundation had been begun. Six hundred feet of the east breakwater had been completed. The walls of the canal had been built; also 2,420 feet of the walls of the 6-meter basin, with the exception of 260 feet on the west side which were only partially completed. About 542,000 cubic yards of rock had been placed of the 1,275,000 cubic yards estimated to complete the project.

Practically none of the dredging had been done, and of the fill only a small area on Engineer Island and along the Pasig River with material dredged from the river.

With American occupation the project was again revised. It was evident that the cost of the work would largely exceed the estimates, and that under the Spanish project a long period of time must elapse before the work could be utilized for any purposes, as the breakwaters must first be built to protect the basin walls from wave action during storms, and a large part of the latter afterwards constructed before dredging could be begun.

The first great necessity of the harbor was protection to shipping from typhoons and the southwest monsoon, which rendered the loading and unloading of vessels in the open bay difficult during many months of the year. To afford this relief as early as practicable it was decided to complete the west breakwater and dredge the area partially protected by it. The cheapest way of disposing of the material was to erect a temporary bulkhead parallel to the shore line behind which it could be pumped. This space in the Spanish project was to form portions of the various basins.

The system of inclosed basins, while desirable in European ports where there is a large tidal range, is not as suitable for Manila Bay, where the tides are moderate. By constructing locks at the outlets to the basins and basing their depth on high tide there is in the former ports a large saving in excavation, and the height required for the quay walls is reduced. The basins afford quiet water for loading and unloading vessels, but are difficult for large steamships to enter. They also do not admit of a ready expansion of dock frontage to keep pace with the growth of commerce.

In American ports for the basins are very generally substituted wharves extending at right angles to the shore, protected where necessary by an exterior breakwater. These wharves, constructed usually of wood or iron, are much cheaper than the stone quay walls of the basins. For the same frontage they afford a much greater space at which vessels can be moored. This system gives a greater protected area than the inclosed breakwaters of the Spanish project, but not as quiet a harbor. The wharves can readily be multiplied and extended as the demands of commerce increase.

For these reasons it was decided to further modify the project.

The existing project is shown in plan on an accompanying map (pl. 2). Under this project the west breakwater is extended 492 feet to the 30-foot contour. A detached breakwater extends for a distance of 3,000 feet approximately parallel to the shore line, with an entrance 710 feet wide at mean low water. The walls constructed under the Spanish project have been utilized to form a small inner basin, 18 feet deep at mean low water, from which a bulkhead extends approximately parallel to the shore line and about 1,800 feet from it to the line of the Spanish east breakwater. Beyond this bulkhead an area of 350 acres is to be dredged to 30-foot depth at mean low water and the dredged material deposited behind it.

The general form of the west breakwater as adopted in the Spanish project is retained, but the height reduced to 11 feet above mean low water.

The detached breakwater is given an exterior slope of 4 on 5 (assumed as the natural slope of riprap) to a height of 12 feet below mean low water, and 1 on 2 above this elevation. The interior slope is the natural slope of the riprap to low water, thence a slope of 1 on 1. The elevation of the top of the breakwater is 8 feet above mean low water and the top width 10 feet. Below low water the stone was to be deposited as riprap. Above low water it was to be laid to the slopes designated, as shown in section 1, plate 2.

The specifications require that all stone deposited in the substructure shall exceed 100 pounds in weight. Two-thirds the mass must consist of stone weighing at least 1,000 pounds, and not less than one-third, by weight of each load deposited, must consist of stone weighing at least 4,000 pounds (which were to be placed on the sea slope). In the superstructure no stone used shall weigh less than 1,000 pounds, except those employed for clinking the larger stone, and at least one-half the total weight of each load deposited must be of stone weighing not less than 4,000 pounds. The top of the wall was to be composed of stone weighing not less than 2,000 pounds.

The stone supplied by the contractors largely exceeded these requirements; over 80 per cent of the weight of the mass delivered consisted of stone exceeding 2 tons in weight.

Seventy-five feet of the breakwaters was constructed of the form shown in figure 2, plate 2. This form affords a better bond for the superstructure than the one specified. The contractors, however, found difficulty in quarrying rock of the regular sections required.

The bulkhead as originally designed was intended as a temporary structure, to be ultimately replaced by a masonry wall. It consisted of a double row of sheet piling, supported by a row of 12-inch squared piles, 4 feet between centers, to which it was connected by 6 by

12 inch waling and tied back to a second row of piling 8 feet between centers. It was to be reinforced by selected dredged material deposited behind it, but as the work progressed it was found that the structure had not sufficient strength to resist wave action nor the pressure of the mud dredged. It was then reinforced by a riprap wall, laid to a slope of 1 on 2, in the shallow water in which it was constructed. This provided protection against typhoons until the detached breakwater could be constructed, and gave a sufficient supply of stone to riprap the front of the bulkhead to the slope the stone will assume when the dredging is completed.

This bulkhead is a cheaper structure than the retaining walls of the Spanish project. These walls were designed to support a thrust of sand, and were of too weak a section to resist a mud fill. It has become necessary to reinforce the walls constructed in the inner basin with riprap to prevent their being overturned. As the canal is too narrow to permit of such a construction, the mud thrust was taken off the wall by building a water-tight bulkhead behind it and filling the space between the bulkhead and the wall with river sand.

The height of the fill was originally placed at 7.5 feet above mean low water; but to allow for settlement and also to afford space for additional dredged material the height was increased to 10.5 feet. The area of land between the Malecon Drive and the bulkhead is 191.4 acres, of which about 148 acres were filled to the height indicated. The remainder of the area was occupied by the Quartermaster's Department, United States Army, and it was necessary to construct a water-tight cofferdam to keep the dredged material from overflowing their territory.

The work has been done by the Atlantic, Gulf and Pacific Company under contracts and supplemental agreements dated August 12 and September 30, 1901, January 19 and July 3, 1903, and January 31, 1905.

At the close of the last fiscal year the contractors had completed the bulkhead and protected it with 208,211 tons of riprap. The east breakwater had been extended to the bulkhead line; 3,384,102 cubic yards of material had been dredged from the harbor and deposited behind the bulkhead; 233,712 long tons of rock had been placed in the west breakwater, and 106,709 tons in the detached breakwater; 5,373.68 cubic yards of rubble masonry of the superstructure of the west breakwater had also been constructed. The stone walls of the inner basin had been reinforced with riprap and a cofferdam 2,433 feet in length constructed to protect the Quartermaster's Department's buildings from overflow by the dredged material.

During the present fiscal year 24,871 long tons of rock have been deposited in the substructure of the west breakwater; 4,858.46 cubic yards of rubble masonry and 4,058.17 cubic yards of concrete coping laid in its superstructure, completing the west breakwater, with the exception of the concrete foundation for a light-house proposed for its outer end. In the detached breakwater 342,576 tons of rock have been deposited, completing the riprap mound to low water and 1,630 feet of the superstructure.

There have been 5,589,353.8 cubic yards of material dredged, 4,880,937.3 cubic yards having been deposited in the space behind the bulkhead, filling it to the proposed grade; 701,323.5 cubic yards in the moat around the Walled City and in the low grounds south of the city hall, and 7,093 cubic yards in Engineer Island.

The 5,000,000 cubic yards of dredging provided for in the original contract has not been sufficient to complete the excavation of the proposed harbor, due principally to the expansion of the material when measured in fill.

By Act No. 1360, dated June 26, 1905, the Philippine Commission have authorized the entering into contract with the Atlantic, Gulf and Pacific Company for the excavation of about 2,000,000 cubic yards additional, of which about 1,600,000 is to be deposited behind a bulkhead in front of the Luneta and about 400,000 cubic yards deposited on the existing fill to bring it to an elevation of about 10 feet after settlement, and for a riprap foundation of a pier extending from the outer end of the east breakwater 1,000 feet at right angles to the bulkhead, which is required to prevent the flow of mud into the dredged area, and which can be utilized for a portion of the wharf system of the port.

The building of a concrete foundation for the light-house at the outer end of the west breakwater has also been included in the contract.

By resolution of the Philippine Commission of May 2, 1905, \$550,000, United States currency (₱1,100,000, Philippines currency) was declared to be reserved from the proceeds to be derived from the next issue of public improvement bonds for constructing two wharves. The dimensions of the wharves are 600 by 70 feet and 650 by 110 feet. They will be constructed with a steel superstructure and concrete floor, supported on concrete piers having a pile foundation. Plans and specifications are in course of preparation.

Plans and specifications have also been prepared by this office for the construction of a timber wharf 500 by 60 feet in the outer harbor, and one 313 by 25 feet in the inner basin for the use of the Quartermaster's Department, United States Army, which are to be built from funds appropriated by the United States Government.

These plans have been prepared by Assist. Engineer H. C. De Lano, who has had local charge of the work since October, 1904.

The following statement of the entrance and clearance of vessels from Manila, by fiscal years since American occupation, has been furnished by the collector of customs for the Philippine Islands:

COASTWISE.

Year.	Entered.		Cleared.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
1899	683	149,129	723	165,161
1900	1,280	240,897	1,310	255,104
1901	1,792	341,853	1,831	354,940
1902	1,660	328,571	1,742	359,359
1903	2,023	388,468	2,045	399,355
1904	2,102	441,320	2,116	455,201
1905 ^a	1,976	425,434	1,990	428,643

FOREIGN.

1899	239	280,846	238	291,649
1900	412	542,058	348	501,522
1901	521	814,241	460	762,930
1902	577	912,982	514	881,985
1903	662	1,179,349	649	1,198,937
1904	655	1,247,959	643	1,222,356
1905 ^a	579	1,113,938	578	1,096,038

^a June, estimated.

PASIG RIVER.

The existing project proposes to maintain, by dredging, an 18-foot channel at mean low water across the bar up the river as far as the Bridge of Spain, and a 6-foot channel through the upper river at the lowest stage of Laguna de Bay.

At the time of American occupation there was about 12 feet at mean low water on the bar and the channel was obstructed by a number of sunken vessels. This office received from the Spanish government for use on the work 4 launches, 6 dump scows, 1 water boat, and 1 barge, all of which were in bad condition and have had to be rebuilt.

To obtain and maintain the 18-foot channel has required the dredging of 1,726,610 cubic yards of material to the close of the last fiscal year. During the present fiscal year 478,705 cubic yards have been dredged. For several years it was necessary to employ the entire plant on the work, but the channel can now be maintained by the use of one dredge.

The upper Pasig River is an important channel of commerce between Manila and the other towns located on its banks and on Laguna de Bay. According to Spanish reports there was originally a depth of but 12 to 14 inches at low water on bars obstructing the various outlets to the Laguna and of only from 14 to 16 inches on bars farther down stream.

The disturbing influence in the regimen of the river is the Mariquina River, which empties into the Pasig at the town of Pasig and during floods brings down large quantities of sediment, which it deposited not only in the lower river, but also in the laguna itself, and has created a delta formation in the lake similar to the one it has formed in Manila Bay.

Between 1886 and 1896 the Spanish authorities materially improved navigation by cutting a canal and rectifying the river for about half a mile above the mouth of the Mariquina and by closing numerous side channels so as to make the branch of the river passing the town of Napindan the principal outlet to the lake.

During the low water of 1900 there was a clear channel depth of 4 feet.

When this office took charge of the work the only dredges available for the upper Pasig were two Priestman and one bucket dredge of a capacity of from 80 to 100 cubic yards each per day. A dipper dredge and a suction dredge have been constructed for the work, and during the fiscal year ending June 30, 1904, dredged 150,421 cubic yards, maintaining a channel of 5½ feet depth at low water through the upper river.

During the present fiscal year 33,558 cubic yards have been dredged for maintaining navigation, but the suction dredge has also been employed in pumping gravel from the river for the surfacing of the Santa Ana-Fort William McKinley Road, the cost of which has been paid from the appropriation for roads and bridges (Act No. 1). Below the mouth of the Mariquina River the river has been contracted for a distance of about 2,000 feet by the construction of wing walls and the shore reveted for a distance of 1,232 feet. The wing walls were constructed of riprap obtained from the Fort William McKinley reservation and the revetment consisted of a bamboo mat sunk with stone.

Expenditures by fiscal years, 1901 to 1905.

MANILA HARBOR.

Year.	Atlantic, Gulf and Pacific Co.	Salaries and wages.	Supplies and material.	Services not personal.	Total.
1901.....		P 10,036.22	P 2,941.84	P 3,340.38	P 16,318.44
1902.....	P 68,743.66	35,099.32	208,011.90	7,667.20	319,552.08
1903.....	1,172,037.22	41,466.60	2,070.18	5,523.98	1,221,097.98
1904.....	2,275,876.56	81,613.24	8,142.69	2,223.80	2,367,856.29
1905.....	2,103,394.60	60,906.13	2,489.66	1,404.98	2,168,195.37
Total.....	5,620,052.04	229,121.51	223,656.27	20,190.34	6,093,020.16

PASIG RIVER.

1901.....		P 30,642.34	P 28,607.34	P 3,158.54	P 62,408.22
1902.....		150,996.48	256,247.16	2,128.64	409,372.28
1903.....		161,142.44	177,362.80	44,881.04	383,386.28
1904.....		157,241.41	102,395.04	2,994.90	262,631.35
1905.....		110,113.91	51,343.57	1,336.70	162,794.18
Total.....		610,136.58	615,955.91	54,499.82	1,280,592.31

Grand total, harbor and river, P 7,373,612.47.

SANTA CRUZ ESTERO.

By Act No. 1114, P 9,636 was appropriated for dredging the Santa Cruz Estero, which was increased P 10,000 by resolution of the Commission by allotment from funds appropriated for the transportation of the constabulary.

The project provides for dredging a 4-foot channel from the Pasig River to the constabulary storehouses, a distance of about 2,700 feet.

Work was begun in April, 1904, with a small Priestman dredge. At the close of the fiscal year about 2,300 feet of the channel had been excavated, 17,400 cubic yards of material having been removed.

A pavement of brick, stone, and tile, which had gradually accumulated, rendered the dredging difficult, as the Priestman dredge is not well adapted to removing such material. The narrowness of the estero and the small clearance under the bridges also delay operations, it being necessary at every bridge to dismantle the plant to get under the obstruction and then to reassemble it before renewing work.

The material excavated has been generally used to fill in the grounds around the buildings of the bureau of coast guard transportation on Engineer Island. At the current prices for earth fill the saving to the bureau of coast guard and transportation, by this fill, exceeds the cost to the constabulary for the excavation.

While a large commerce in cascoes and bancas has already been benefited by this improvement, an extension of the work to the juncture with the Binondo Canal, a distance of about 900 feet, is extremely desirable. A farther extension to Paseo Azcarraga would afford a cheap means for transportation to the heart of the city of products arriving on the Manila and Dagupan Railroad. By deepening the estero to Palumpang connection would be made with the Bitas River and with a large internal water system east of Manila Bay. A considerable commerce at present seeks this channel, though limited to transportation in bancas and rafts, which can only be moved at high tide. As the business of the city is largely based on transportation by cascoes, the development of the esteros has an importance that would not exist in American towns.

REPAIRS TO PASIG RIVER WALLS.

The balance of P 4,829.59 remaining at the close of the last fiscal year of the allotment by Act No. 886 for the repairs to Pasig River walls has been expended in pointing up the face of the wall, resetting coping stones that had become loose, and setting cannons for mooring posts. The section of wall near the Anda Monument, which was damaged during the flood of July, 1904, was also repaired.

The improvement of the Pasig River, of Santa Cruz Estero, and the repairs to the Pasig River walls have been in local charge of Asst. Engineer James E. Ainsworth.

IMPROVEMENT OF THE PORT OF CEBÚ.

This work was authorized by Acts Nos. 640 and 1342, which appropriated ₱1,084,000 for the purpose and its transfer to this office by Act No. 1339.

The original project was prepared under the direction of the bureau of engineering and provides for the construction of a bulkhead of concrete masonry 2,600 feet long, the reclaiming of about 13 acres of land along the water front, and the dredging along the bulkhead to 18 and 23 feet below mean low water. It is described on page 210, report of the Philippine Commission, 1903, paragraph 3. The project for the bulkhead has been modified by the substitution of concrete deposited in mass for the concrete blocks of the original design. The area of the section has also been enlarged and a vertical face given to the wall.

The contract for the work was awarded to J. G. White & Co. on March 30, 1904. This contract specifies that the cement required shall be furnished by the government, and a contract was entered into January 21, 1905, with the Alsen Portland Cement Company for delivering 30,000 barrels of cement. Ten thousand nine hundred and seventy-nine barrels have been delivered and stored by the contractors for the work, who began operations December 15, 1904.

At the close of the fiscal year there had been erected two storehouses for cement, a concrete mixer, and a railroad built about 2.5 miles in length from the Guadalupe River to the concrete mixer, which is to be used for transporting sand and gravel for the work.

The work has been in local charge of Mr. T. Warren Allen, supervisor, province of Cebú, Cebú, P. I.

The following statement of the entrance and clearance of vessels from Cebú, by fiscal years, since American occupation has been furnished by the collector of customs, Philippine Islands:

COASTWISE.

Year.	Entered.		Cleared.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
1899.....	218	27,828	206	28,036
1900.....	1,347	100,676	1,642	104,701
1901.....	3,685	145,726	4,225	147,566
1902.....	5,008	165,485	5,263	151,850
1903.....	4,099	168,718	4,206	160,892
1904.....	2,755	193,174	2,875	196,360
1905.....	2,627	191,593	2,973	191,880

FOREIGN.

Year.	Vessels.	Tonnage.	Vessels.	Tonnage.
1899.....	14	14,419	8	9,132
1900.....	54	60,130	48	59,147
1901.....	71	91,015	75	94,780
1902.....	73	88,438	62	86,456
1903.....	118	169,257	113	168,516
1904.....	110	152,023	105	145,625
1905.....	123	186,433	112	175,174

IMPROVEMENT OF THE PORT OF ILOÍLO.

This improvement was provided for by Acts Nos. 641 and 1342, appropriating ₱532,000 for the purpose, and the work was transferred to this office by Act No. 1339.

The original project was prepared under the direction of the bureau of engineering and provides for the dredging of a channel in the Iloilo River to a depth of not less than 15 feet at mean low water, the construction of breakwaters across the bar at the entrance to the river, and the construction of a system of dikes and levees to control the river flow. It is described on page 211, report of Philippine Commission, 1903, part 3.

The contract for the work was awarded to J. G. White & Co. on March 30, 1904, who began operations in August. At the close of the fiscal year the contractors had driven 24,800 linear feet of piles, delivered 2,800 cords of facines, of which 2,100 cords had been placed in the dikes, and quarried 14,500 tons of stone, of which 13,400 had been deposited on the breakwaters and dikes.

A 16-inch suction dredge is being constructed by the contractors, who expect to begin dredging operations early in August.

The work has been in local charge of Asst. Engineer W. Meadowcroft.

The following statement of the entrance and clearance of vessels from Iloilo, by fiscal years, since American occupation has been furnished by the collector of customs, Philippine Islands:

COASTWISE.

Year.	Entered.		Cleared.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
1899	108	41,091	146	44,655
1900	512	77,837	585	82,784
1901	2,171	137,864	2,232	139,303
1902	3,558	205,290	3,584	202,012
1903	3,398	194,947	3,435	196,763
1904	3,381	184,050	3,362	182,278
1905	3,567	176,512	3,525	173,448

FOREIGN.

1899	24	26,865	27	35,769
1900	47	55,539	52	62,775
1901	70	77,303	75	81,585
1902	86	87,627	92	94,419
1903	105	115,843	105	115,216
1904	113	121,188	117	121,031
1905	90	128,193	93	135,046

SURVEYS AND INVESTIGATIONS OF NAVIGABLE RIVERS.

By Act No. 1339 the surveys and investigations of navigable rivers and harbors will be made by this office, excepting such as have been assigned by law to the coast and geodetic survey. Such waterways are numerous in the Philippines and near them is found the great mass of the native population. With the ocean and seas with which they connect they form natural lines of communication over which products may be transported much cheaper than over any railroad and which for long distances will require no annual expenditure for maintenance of way. To perfect these waterways there is only required what in railroad parlance are termed terminal facilities.

While Manila, with its new harbor, the Pasig River, and its numerous esteros, will soon possess facilities for water transportation equalled by few cities in the world, but little has been done by the general government, by the municipalities, or by private interests to develop the other ends of these lines, nor does there exist reliable data upon which to base projects for improvement.

The railroad development which has been proposed may so tax the revenues of the government as to render it inadvisable at the present time to enter into a general plan of improving waterways, but the construction of these railroads will necessitate the immediate development of the harbors from which they start.

An appropriation of ₱30,000 for making the necessary surveys and investigations for the improvement of such harbors is recommended.

A financial statement is appended.

Respectfully submitted.

C. MCD. TOWNSEND,
Major, Corps of Engineers, U. S. Army,
In Charge of Port Works.

The GOVERNOR-GENERAL OF THE PHILIPPINE ISLANDS.
(Through the Secretary of Commerce and Police, Manila, P. I.)

Financial statement, improvement of the port of Manila.

[Act No. 22, and acts amendatory thereof.]

Total appropriations and refunds to date.....	₱8,798,206.31
Expended previous to June 30, 1904.....	₱5,042,622.92
Expended during fiscal year ended June 30, 1905.....	2,330,989.55
Total expended.....	7,373,612.47
Balance on hand.....	179,503.84
Balance subject to accountable warrant.....	1,245,090.00
Total.....	8,798,206.31

REPORT OF OFFICER IN CHARGE OF PORT WORKS.

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Improvement of the port of Cebu, Acts Nos. 640 and 1342.

Total appropriations to date.....	₱1,084,000.00
Disbursements by J. G. Jester, disbursing officer, Washington, D. C.....	₱831.30
Disbursements by auditor, Philippine Islands.....	2,064.13
Disbursements by disbursing officer, executive bureau.....	3,734.36
Disbursements by Maj. C. McD. Townsend, civil engineer...	2,344.42
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Total disbursements.....	8,974.21
Balance on hand.....	2,655.58
Balance subject to accountable warrant.....	1,072,370.21
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Total.....	1,084,000.00

Improvement of the port of Iloilo, Acts Nos. 641 and 1342.

Total appropriations to date.....	₱532,000.00
Disbursements by J. G. Jester, disbursing officer, Washington, D. C.....	₱902.90
Disbursements by auditor, Philippine Islands.....	13.59
Disbursements by disbursing officer, executive bureau.....	75,005.59
Disbursements by Maj. C. McD. Townsend, civil engineer.....	16,224.05
<hr/>	
Total disbursements.....	92,146.03
Balance on hand.....	33,775.95
Balance subject to accountable warrant.....	406,077.92
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Total.....	532,000.00

Dredging Santa Cruz Estero, Acts Nos. 1114 and 1361.

Total appropriations to date.....	₱19,636.00
Expended previous to June 30, 1904 (Act No. 1114).....	₱1,505.70
Expended during fiscal year ended June 30, 1905 (Act No. 1114).....	8,129.69
Expended during fiscal year ended June 30, 1905 (Act No. 1361).....	6,551.86
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Total expended.....	16,187.25
Unexpended balance Act No. 1114, returned to treasurer Philippine Islands, December 23, 1904.....	.61
Balance on hand, Act No. 1361.....	3,448.14
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Total.....	19,636.00
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Appropriations:	
Act No. 1114.....	9,636.00
Act No. 1361.....	10,000.00
<hr/>	
	19,636.00

Repairs to roads and bridges, Philippine Islands, Act No. 1.

Amount on hand July 1, 1904.....	₱16,209.33
Expended during fiscal year ended June 30, 1905.....	2,203.43
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Balance on hand June 30, 1905.....	14,005.90

The expenditure shown above during fiscal year ended June 30, 1905, is for repairs to road Santa Ana to Fort William McKinley, Rizal Province, on authority granted by the governor-general Philippine Islands.

Repairs to Pasig River walls, below Bridge of Spain, Act No. 886.

Total appropriation.....		₱10,820.00
Expended previous to June 30, 1904.....	₱6,090.42	
Expended during fiscal year ended June 30, 1905.....	4,829.14	
	<hr/>	
Total expended.....	10,919.56	
Unexpended balance returned to treasurer Philippine Islands, January 23, 1905.....	.44	
	<hr/>	
Total.....		10,920.00

Maps for insular officials, Act No. 807.

Total appropriated.....		₱400.00
Disbursements previous to June 30, 1904.....	₱315.53	
No disbursements during fiscal year ended June 30, 1905.....		
	<hr/>	
Total expended.....	315.53	
Balance on hand.....	84.47	
	<hr/>	
Total.....		400.00

APPENDIX G.

REPORT ON THE WORK OF THE COAST AND GEODETIC SURVEY.

MANILA, P. I., *June 30, 1905.*

SIR: I have the honor to submit the following report of the work of the coast and geodetic survey in the Philippine Islands during the fiscal year ending June 30, 1905.

During absences of the undersigned, the following officers have been temporarily in charge at Manila of this work: J. E. McGrath, assistant, coast and geodetic survey, July 1 to August 24, 1904; R. B. Derickson, assistant, December 27 to December 31, 1904; E. R. Frisby, chief computer, May 16 to May 27, 1905.

By direction of the superintendent of the coast and geodetic survey, the undersigned went to the United States in March and returned to Manila in August, 1904, and while temporarily on duty in Washington many matters affecting the Philippine work were considered and useful information gathered, particularly as regards chart preparation and publication, personnel, instruments, computations, field methods, etc. A systematic plan for the preparation of chart drawings in Manila and their prompt publication in Washington was arrived at. Under authority from the Secretary of Commerce and Labor, the return voyage to Manila was made by way of London and Madrid, for the purpose of making inquiries regarding British and Spanish surveys in the Philippine Islands. In London I was courteously permitted to examine the original sheets of the surveys made in former years by British vessels within the limits of the islands. In Madrid I was furnished information at the various government offices regarding the work done by the Spanish in the Philippine Islands, and learned that in general the results of the government surveys have all been published. I was fortunate in meeting in Madrid Mr. Enrique d'Almonte, the leading Spanish geographer of the Philippines, and secured from him the remainder of his collection of Philippine maps, partly in manuscript. From my inquiries in Madrid I concluded that there is no further unpublished information of geographic value available, except perhaps of an historical nature.

FIELD WORK.

The following is a brief summary of the field work done during the fiscal year:

West coast of Luzon.—Triangulation and topography—shore party July, 1904, W. B. Fairfield, chief of party; January and February, 1905, R. B. Derickson, chief of party. Mr. Fairfield's work along the coast of Zambales Province was terminated in July, 1904, near Botolan Point, south of Iba, on account of the rainy season. This work was extended to the southward in January and February, 1905, by Mr. Derickson, the topography being carried to Cabilangan and the triangulation to Capones light-house; there remains only a small stretch to complete the topography of Zambales Province coast.

Guimaras Strait and coast of Guimaras Island.—General survey, hydrography, triangulation, and topography, steamer *Research*, July, 1904, R. B. Derickson, commanding; December, 1904, to June, 1905, W. C. Dibrell, commanding. The surveys of the previous season south of Iloilo were extended, and at the end of the fiscal year the coast of Guimaras Island, and of Negros Island between Bacolod and Binalbagan, and the intervening water area, had been practically completed. The former charts of Guimaras Strait were dangerously misleading, channels having been shown where shoals exist, and shoals where there are good channels. Because of the many islands much intricate work was required around the southern coast of Guimaras.

Batangas and Balayan bays and Verde Island Passage, southwest coast of Luzón, general survey, hydrography, triangulation, and topography, shore party with chartered launch *Amelia*, August, 1904, to February, 1905, William Bowie, chief of party. This survey includes Batangas Bay, Balayan Bay, Port Maricaban, the anchorages off the towns of Batangas, Balayan, and Taál, and the waters surrounding Maricaban Island, including the northern side of Verde Island Passage from Cape Santiago to Matocot Point. Minerva Rock, a doubtful danger which the charts have shown in the entrance to Balayan Bay, was proved not to exist, as well as another shoal north of the east end of Maricaban Island.

Southeastern part of Iligan Bay, north coast of Mindanao, general survey, hydrography, triangulation, and topography, shore party, September, 1904, to January, 1905, O. W. Ferguson, chief of party. This survey includes the anchorages at Camp Overton, Iligan town, and at Quinalang Cove, the off-lying hydrography, and the coast topography from Binuni Point on the westward to the point north of Quinalang Cove. The work was done because of the importance of this vicinity as the entrance to the Lake Lanao country and the incompleteness and the inaccuracy of existing charts. The military authorities courteously granted the use of the station steam launch for the offshore hydrography, the balance of the work being done with small boats.

Northwest coast of Luzón, Point Dile to San Fernando, hydrography, steamer *Pathfinder*, November, 1904, to February, 1905, Ferdinand Westdahl, commanding. This survey consisted of filling in the hydrography along the coast and for a few miles offshore, from Vigan to San Fernando, thus completing the survey of the northwest coast of Luzon from Lingayen Gulf to Laoag. Special development was made of Vigan Anchorage, Solvec Cove, Port San Esteban, and Santiago Cove. Also, when leaving this field of work, a line of deep-sea soundings was made by the *Pathfinder* from off San Fernando to Iba.

North coast of Panay, Sapián Bay, and Adán River mouth, general survey, hydrography, triangulation, and topography, steamer *Research*, August to November, 1904, R. B. Derickson, commanding. This survey was for the purpose of filling in the lacking portions of the important stretch of coast between Cápiz and Calivo, the other portions including Port Batán and Cápiz Bay having been finished the previous season.

Manila Bay to Lingayen Gulf, triangulation through the central valley of Luzón, November, 1904, to June, 1905, W. B. Fairfield, chief of party. This triangulation is for the purpose of connecting in position the coast surveys on the northwest coast of Luzón with those of Manila Bay and to the southward. Incidentally it determines the position of many intermediate points in this important valley, which may be used as reference points for other surveys. At the close of the fiscal year the field work had been nearly completed.

Manila Bay, hydrography of vicinity of Malabon, and of San Nicolás Banks, shore party with chartered launch *Filipinas*, November, 1904, to January, 1905, H. M. Trueblood, chief of party. This survey was made for the purpose of filling in and correcting important areas on the Manila and Cavite chart and on the Manila Bay chart. San Nicolás Beacon was known to be incorrectly located, and this survey developed the fact that San Nicolás Banks were very different from what had been shown. The work off Malabon was for the purpose of filling in a blank area on the local chart and showing the entrance to Malabon. While a complete survey of Manila Bay will be necessary later, it may be postponed for the present with these features cleared up.

Northeast coast of Samar, vicinity of Laoang (Laguan), general survey, hydrography, triangulation, and topography, shore party with chartered launch *Comillas*, February to June, 1905, O. W. Ferguson, chief of party. This work was taken up because of the present importance of information affecting the coast of Samar and the very incomplete knowledge of the north and east coasts. The work of this party includes Laguan Bay, Port Palapag, and the neighboring islands and channels. The work was in progress at the close of the fiscal year. The local launch was chartered only a part of the time to facilitate the work.

West coast of Luzón, coast south of Manila Bay, and dangers near entrance of Manila Bay, general survey, hydrography, triangulation, and topography, steamer *Fathomer*, March and April, 1905, C. C. Yates, commanding. This work included the investigation of an "existence doubtful" shoal extending from Caballo Island, investigation of reported danger off Vigia Point, and survey of the coast south of Manila Bay to San Diego Point south of Nasugbú. The variously placed rock off Nasugbú was definitely located and the reported dangers near Caballo Island and Vigia Point were proven not to exist. The results of this survey will materially improve the chart of the vicinity of Manila.

West coast of Luzón, reefs off Iba and Palaug Bay, hydrography, steamer *Pathfinder*, February to March, 1905, Ferdinand Westdahl, commanding. This work included the location and sounding out of the group of reefs lying to the westward of Iba, off the coast of Luzón, and the hydrography of the anchorage at Iba and of Palaug Bay, a few miles to the northward of Iba. This work was of importance because in recent years several vessels have been injured on these reefs and because no local surveys existed of the anchorages at Iba or Palaug.

Investigation of dangers near San Bernardino Strait, hydrography, steamer *Pathfinder*, April, 1905, Ferdinand Westdahl, commanding. Because of conflicting reports regarding the position in which the steamer *Pharsalia* was wrecked, a reconnaissance was made of the vicinity; the wreck was found to be lying on the southeastern part of Calantas Bank, the chart being fairly correct as to the southern extent of this shoal. Soundings were made in Biri Channel north of Samar, and it was proven that the two doubtful shoals shown as lying near the center of the channel do not exist, thus clearing this useful channel; a good typhoon anchorage east of Biri Island was also developed.

East coast of Samar, general survey, hydrography, topography, and triangulation, steamer *Pathfinder*, April to June, 1905, Ferdinand Westdahl, commanding. Because of the present number of government vessels going to this coast, this work was taken up as early as the monsoon season would permit. Work was commenced in the vicinity of Oras, and at the end of the fiscal year had been extended to Apiton and Hilaban Islands and was still in progress. This coast was found to be very crudely represented on existing charts, there being serious errors in distances and relative positions. A small harbor that may be valuable as a refuge was found between Oras and Dolores.

East coast of Luzón, general survey, hydrography, topography, and triangulation, steamer *Fathomer*, May and June, 1905, C. C. Yates, commanding. The east coast of Luzón is the most poorly charted of the commercially important parts of the islands. In previous seasons new surveys have been carried, to include Lagonoy Gulf and the south coast of Catanduanes Island. The present season's work was commenced at Maqueda Channel between Catanduanes and Luzón, and the surveys are being extended to the north and northwest and the work is in progress at the close of the fiscal year. Preliminary reports received show that points on the northwest coast of Catanduanes Island and on the islands to the westward of Catanduanes are in error from 3 to 4 miles as shown on the present charts.

Tidal and magnetic observations.—In addition to the field work above outlined observations of tides and currents and of the magnetic declination have been made in connection with the other work, and in addition automatic self-registering tide gauges have been maintained throughout the year at Manila and at Iloilo.

Survey steamers.—The coast and geodetic survey steamer *Pathfinder*, after a thorough overhauling at Hongkong, returned to the Philippines November 4, 1904, and has since been continuously at work, except for short intervals when outfitting at Manila.

The steamer *Research* has been continuously engaged on field work throughout the year, except for short intervals when outfitting or effecting minor repairs.

The steamer *Fathomer* was under construction at Hongkong at the beginning of the fiscal year, under the inspection of C. C. Yates on behalf of the survey and also of Lloyd's surveyor at Hongkong, as required by the contract. The time of completion was extended to December 10, on sufficient representations of the contractor, the Hongkong and Whampoa Dock Company, that the delay had been caused by nonarrival of materials from England and the United States. The trial trip took place at Hongkong on December 10, with the following board acting for the coast and geodetic survey: C. C. Yates, assistant; J. C. Dow, nautical expert; H. C. Liebenow, inspector of boilers, city of Manila; E. S. Daniels, watch officer, and D. Macdonald, surveyor to the British corporation. The vessel made a speed of 10.5 knots, being 0.5 knot more than contract requirements. The board recommended the acceptance of the vessel on the completion of certain changes and additions to be made by the contractor and with certain guarantees for a limited time. The *Fathomer* was delivered by the contractor in Manila Bay on January 19, 1905, and was immediately taken over and placed in commission. The steamer was hauled out on the marine railway at Cañacao on April 3, and examination made under the guarantees of the builders, and the vessel was finally accepted, all requirements having been fulfilled. The vessel was completed within the amount of the appropriation. In the arrangements for survey work and living quarters, the *Fathomer's* design differs materially from existing surveying vessels, and those who have served aboard report the steamer as conveniently adapted for the purpose intended and as comfortable for the Tropics.

OFFICE WORK.

The existing plan contemplates the completion of the preliminary office work at Manila, for the reason that much of it can be done more intelligently in the regions concerned than it could be so far away as Washington. The office work is done in the following divisions: Computing, nautical information, chart construction, hydrographic verification and correspondence, and property. The whole is under the supervision of the director, who draws up the schemes for field work and for charts, examines chart drawings and nautical information prepared for publication, and makes such further inspection of the work in each line as time permits.

Computing division.—This has continued under the supervision of Mr. E. R. Frisby, chief computer, who has been assisted by one computer for the past three months, by two junior computers throughout the year, and by occasional aid from members of the field force temporarily on duty in Manila. The work of this division comprises the receipt and register of all survey records (not drawings), and the completion of all computations necessary to put the field records in shape for chart construction or other purpose. Where computations are made in the field they are verified. The principal classes of computations are the reduction of tidal observations and planes of reference, reduction of astronomical observations for latitude, longitude, and azimuth, reduction of all soundings to mean lower low water

computation of distances, positions, and elevations from triangulation, and computation of magnetic declination. Data must constantly be prepared for the use of field parties in extending surveys, and for the use of the office in plotting hydrographic sheets and preparing charts.

Nautical information division.—This was in charge of J. C. Dow, nautical expert, until March, 1905, when H. L. Ford, nautical expert, took up this duty. The following publications were prepared, verified, and issued: Notices to Mariners, Nos. 6 to 12 of 1904; Notices to Mariners, Nos. 1 to 7 of 1905; Sailing Directions, Section III, Coasts of Panay, Negros, Cebú, and Adjacent Islands, edition 1904; Sailing Directions, Section IV, Coasts of Sámar, and Leyte and the East Coast of Luzón, edition 1904; Sailing Directions, Section V, Coasts of Mindanao and Adjacent Islands, edition 1905; Catalogue of Charts, Sailing Directions, and Tide Tables of the Philippine Islands, 1905.

Manila being the shipping center of the Philippines, an important duty of the nautical expert has been furnishing information in response to inquiries regarding charts, sailing directions or other nautical matters, and files of corrected charts and other publications are kept in the office for the benefit of those interested.

During the latter part of the year the chart-correction work has been under the supervision of the nautical expert, and a systematic register of chart corrections has been established. One or two junior draftsmen are constantly engaged in placing important corrections on charts from new information, and all charts are thus corrected by hand before issue.

Chart construction division.—This has been in charge of J. P. Keleher, chief draftsman, except during his absence from October 15 to December 2, 1904, when John Bach, observer, acted in charge. Twelve junior draftsmen and 3 apprentice draftsmen have been engaged on this work. The work of this division includes the preparation of drawings for new charts and new editions of charts, the completion of unfinished field sheets, as the inking of topographic sheets and the plotting of hydrographic sheets, the preparation of projections for field parties, and of various miscellaneous drawings required.

The following 25 chart drawings have been completed in Manila during the fiscal year and forwarded to the United States for printing: No. 4511, Basilan Strait; No. 4619, Eastern part of Illana Bay (with 2 plans); No. 4265, Harbors on east coast of Luzón (9 plans); No. 4417, Northeast coast of Panay; No. 4646, Pujada Bay; No. 4345, Anchorages Verde Island Passage to Cuyo (9 plans); No. 4238, Bolinao Harbor; No. 4456, Harbors of Sámar and Leyte (8 plans); No. 4458, Harbors in Cebú and Negros (8 plans); No. 4237, Tabaco Bay to Legaspi; No. 4423, Southern part of Sámar; No. 4222, Lagonoy Gulf to Sisiran Bay; No. 4221, Albay Gulf and Lagonoy Gulf (new edition); No. 4457, Guiuan and approaches; No. 4644, Harbors on north coast of Mindanao (16 plans); No. 4710, Batan Islands (1 plan); No. 4348, Cagayán Sulu and Sandakan (4 plans); No. 4209, Lingayan Gulf (1 plan); No. 4618, Dumanquilas Bay and part of Illana Bay; No. 4346, Harbors of Palawan Island (6 plans); No. 4316, Northwest coast of Palawan; No. 4514, Tawitawi Islands (3 plans); No. 4541, Joló anchorages (3 plans), new edition; No. 4231, Manila Harbor (new edition), and No. 4207, Laoag to Vigan (2 plans).

There have been published in Washington during the year 28 new Philippine charts or new editions of charts, comprising the first 14 named above and the following: No. 4718, Panay, Negros, Cebú, and part of Bohol; No. 4454, Harbors in Burias and Ticao Islands; No. 4311, Southern part of Mindoro and Semerara Islands; No. 4453, Harbors on Marinduque and Tablas Islands; No. 4455, Harbors on the coast of Masbate; No. 4719, Surigao Strait and Leyte, with parts of Sámar and Mindanao; No. 4715, Southeastern Luzón and northern Sámar and Masbate; No. 4713, East coast of Luzón (new edition); No. 4239, Port Sual to Comas Island; No. 4452, Danao River and approaches; No. 4653, Harbors on the south coast of Mindanao; No. 4219, Passages between Luzón and Masbate; No. 4722, Sulu Archipelago; No. 4715, Southeastern Luzón (new edition).

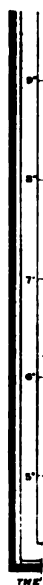
At the close of the fiscal year there were in preparation at Manila drawings for 17 charts or new editions of charts, of which 7 were well advanced.

Hydrographic verification division.—John Bach, observer (now appointed cartographer), was detailed to this duty in December, 1904. The work consists of the examination and verification of hydrographic sheets, the examination and registry of all survey sheets, and assistance in the verification of chart drawings, and is indispensable in maintaining a proper standard of accuracy and system.

Correspondence and property division.—W. H. MacDonald has continued to act as chief clerk, in charge of routine business of the office, including property returns, the first checking of vouchers, time records, distribution of publications, requisitions, forwarding instruments and supplies to field parties, stationery, etc.

William Auerbach was appointed as clerk in September, 1904, and he has since acted as stenographer and assisted in the clerical work. One junior clerk has been employed part of the year to assist in copying.

The office force at present consists of the following: Director, 1; chiefs of divisions and chief clerk, 5; computers, 3; clerks, 2; draftsmen, 16; messenger, 1; total, 28.



Two student draftsmen from those in this office were sent to the United States in December, 1904, under the arrangement of the Philippine government for sending Filipino students to the United States. They are now in Washington, where they are receiving training in chart work, etc., at the office of the Coast and Geodetic Survey.

Distribution of publications.—During the fiscal year about 6,000 charts have been sent out from the Manila office, either for official use or for sale. Of this number about 1,500 charts were furnished to the Navy, and about 2,200 charts to various departments of the Philippine government.

About 9,000 copies of Notices to Mariners and about 2,200 copies of Sailing Directions have been distributed during the year to nautical men, shipping companies, and others interested.

Valuable information has been received from the civil, military, and naval officials, and from commercial and private sources, among which may be mentioned especially reports from coast-guard vessels, the light-house service, army transports, customs cutters, bureau of engineering, office of port works, etc. Verbal and manuscript information, sketches, and blue prints have been furnished by this office in response to various inquiries and requests.

Additional vessels for survey work.—At the close of the fiscal year, under authorization of the Department of Commerce and Labor of the United States, and of a resolution of the Philippine Commission, arrangement had been made for the transfer of two coast-guard vessels for survey work, to be operated under an extension of the former joint arrangement. Plans are in progress for the transfer of these vessels and their equipment for survey work in a few months.

Joint arrangement.—During the year the work has been prosecuted under the same general plan of division of expense as previously. The United States has paid the salaries and subsistence of its technical corps detailed for this duty, including several experts in the office, has furnished nearly all the instrumental equipment, has paid all the expense of operation of one large surveying vessel, of chart publication, traveling expenses to and from the United States, and a part of the expense of coal and launch hire. The Philippine government has paid the other office and field expenses in the islands, including the local force of the office in Manila, the operation of two survey vessels, the building of a new survey vessel, and has furnished office accommodations and printing. Money and property accounts are rendered to each government for the resources furnished, respectively, and complete duplicate reports of all work accomplished are rendered to the secretary of the department of commerce and police of the Philippine government, and to the Superintendent of the Coast and Geodetic Survey at Washington.

A sketch is attached showing the work accomplished by the coast and geodetic survey in the Philippine Islands up to June 30, 1905.

Respectfully submitted.

G. R. PUTNAM,
*Assistant, Coast and Geodetic Survey,
Director of Coast Surveys, Philippine Islands.*

THE SECRETARY OF COMMERCE AND POLICE,
GOVERNMENT OF THE PHILIPPINE ISLANDS.

APPENDIX H.

REPORT OF OFFICER IN CHARGE OF CONSTRUCTION OF BENGUET ROAD.

IMPROVEMENTS IN BENGUET PROVINCE,
OFFICE OF OFFICER IN CHARGE,
Manila, P. I., August 31, 1906.

SIR: I have the honor to submit the following report on the construction of the Benguet road from its inception in 1900 to its completion in 1905.

Very respectfully,

L. W. V. KENNON,

Major Tenth U. S. Infantry, Officer in Charge.

The SECRETARY OF COMMERCE AND POLICE,
Manila, P. I.

REPORT ON THE CONSTRUCTION OF THE BENGUET ROAD.

By Maj. L. W. V. KENNON, *Tenth Infantry, Officer in Charge.*

NARRATIVE.

There are hotter places than the lowlands of the Philippines—hotter places than Manila—but there is none where there is such a never ending, boundless continuity of heat, day in and day out, week after week, month after month, throughout the whole cycle of the year—none which so insidiously saps the vitality and relaxes the springs of energy native to men from colder climates. Our troops suffered from the effects of it, and search was made for some cool spot in the islands where convalescing invalids could regain strength and vigor. The War Department directed that regiments after two or three years service should be returned to America. Staff officers were not to serve more than two years in this enervating climate. Convalescing invalids were sent to Corregidor, to China, to Japan, and to America to regain health and strength. Many who could not afford such a change became chronic invalids or died.

These were no new conditions brought about by American occupation. Our Spanish predecessors suffered in like manner and sought some place in the Philippine Islands where an invigorating climate and relief from the endless, tropical heat of the lowlands might be found. After three centuries of occupation and observation they fixed upon Baguio, in the province of Benguet, as the one place most nearly filling all of the required conditions. Situated about 5,000 feet above sea level, on the southwestern corner of the mountain system of northern Luzón, its rolling, turf-covered hills, studded thick with fragrant pines, swept by all the breezes that blow either from the north or south or east or west, with a low mean annual temperature and an occasional touch of frost, Baguio seemed indeed an ideal haven of refuge from the torrid plains in which the principal towns and business centers of the islands are located.

The plateau enjoying all these advantages was, however, most difficult of access. The first explorers reached it only by following the steep, slippery, dangerous, and obscure trails of the native Igorrote. To make the highlands of Benguet accessible to the white man, the Spaniards, toward the end of the last century, built a horse trail from Naguilian to Trinidad and Baguio and planned an extensive sanitarium and other buildings in Baguio. Insurrection and war prevented the carrying out of the project.

Soon after the American occupation the manifest need of some such institution was recognized and the Government decided to carry into effect as soon as practicable the plans of its predecessors. Baguio could practically be reached only from San Fernando and Naguilian, necessitating a sea trip of twenty-four hours from Manila and two or three days of horseback travel over a steep trail built by the Spaniards in 1892. In the stormy season

steamers were frequently a week in going from Manila to San Fernando. Evidently such a trip was quite impossible for invalids not convalescent.

Then, too, the enterprising American volunteer soldier in scouting through the mountains found evidences of mineral wealth. The Igorrotes made implements of copper, mined and worked by themselves. Gold was washed by them from the beds of creeks. Prospectors were locating and developing claims which gave promise of proving very valuable. There was a call for improved transportation facilities for Baguio, and the Civil Commission, by its Act No. 2, of September 12, 1900, authorized a survey for a railroad which should connect Dagupan, the terminus of the Manila and Dagupan Railway, with Baguio.

The survey was made under the direction of Capt. C. W. Mead, Thirty-sixth U. S. Volunteer Infantry, who reported also that a wagon road could be quickly constructed from Pozorrubio to Baguio through the Bued River Canyon for \$75,000, United States currency. The Commission, therefore, by its Act No. 61, dated December 21, 1900, authorized the construction of the road, appropriated \$75,000 for the purpose, and directed that it be pushed to completion by July 1, 1901. The new road it was estimated would be about 35 miles in length, and would connect at the northern end with the older Spanish road from Trinidad to Baguio, and at the southern end with the provincial road near Pozorrubio.

Work was begun on this end on January 15, 1901, under the direction of Lieut. Francis H. Lomax, Forty-second U. S. Volunteer Infantry, the laborers being Igorrotes with American foremen. On January 16, 1901, construction at the south end was begun at Agaat, from which point the road was opened toward Pozorrubio. Connection was made with a point on the Pozorrubio-Alava highway called Babunan, distant about 6.4 miles from Agaat and 3 miles from Pozorrubio. By July 1 it was reported that 9½ miles of roadway had been opened up, including the improvement of existing trails from Agaat to the mouth of the canyon of the Bued River. In the canyon itself but little work had been completed. The difficulties of construction had been very much underestimated. Instead of earth, rock had been encountered and it is stated that an amount equal to the whole appropriation was subsequently expended in making a roadbed along the first cliff at the canyon's entrance. Labor was scarce, untrained, unwilling, and extremely difficult to procure.

The rainy season coming on, work was suspended for the time being. Captain Mead was appointed city engineer of Manila, and Mr. N. M. Holmes was appointed chief engineer of the Benguet road, on August 20, 1901.

Mr. Holmes took hold of the work with energy and pushed the construction along so that by January 1, 1902, he was able to report the road open for travel to a point about 10 miles north of Babunan and from Baguio about 8 miles south, leaving a gap of about 17 miles, on which some work had been done for about 5 miles. In July, 1902, he reported as opened up sufficient for wagon travel an aggregate of about 23 miles. A horse trail had also been made for about 6 miles, while 6 miles were impassable for horse or vehicle.

The road "opened up" was by no means a finished road, but the roadbed had been roughly blocked out and was passable for carts.

The work for the following year seems to have consisted largely in widening, ditching, and metaling the road reported as "opened up;" in the construction of bridges and culverts, and in repairing the damage done by floods in the rainy season. A bridge over the Bued River was washed out and was replaced by a Howe truss of 135 feet span, the lumber for which, as for all bridges, was sawed by hand.

The upper section of the road had suffered severely, and slides developed which carried away the roadbed and caused the abandonment of that portion of the road. Several miles of rock work were thus thrown away. The work had been well done and stands well to-day, except in the valley of Emerald Creek where the slides occurred. The nature of this country is such that it is practically impossible to foretell the effects of cutting into the mountain side. This was a smooth, grass-covered slope of not unusual steepness and would ordinarily be entered without hesitation. The cut, acted upon by torrential rains, developed a mountain of angular fragments of rock in clay, without showing any bed rock upon which a secure foundation could be had.

During the year the labor situation had been as unsatisfactory and disappointing as ever. Cholera broke out and practically suspended the work for months. Mr. Holmes reported that "despite agents, letters, and personal appeals to the sources from which our labor is drawn, no result was obtained, and the work has been suffered to drag along, so crippled by the lack of labor as to make the most unsatisfactory progress, costing, as well, considerably more than would have been necessary by having a steady, regular supply of sufficient labor to properly distribute among the various camps, and so allow an economical organization of office and administrative force."

On June 30, 1903, Mr. Holmes reported the road passable for wagons from the beginning at the south end to 14 miles north and from Baguio 5 miles south, with several small pieces of roadway and horse trail opened up between those limits.

Although the work had been carried on under great difficulties and with many disappointing setbacks, it had not progressed with a speed satisfactory to the Commission, which

was desirous of completing the road as soon as possible. In a meeting of June 1, 1903, a resolution was adopted declaring it to be the policy of the Commission to make Baguio the summer capital of the archipelago, to erect suitable buildings at that place, and to construct a wagon road from Naguilian to Baguio. The Commission also stated that it was the intention to place Maj. L. W. Kennon, Tenth Infantry, U. S. Army, in charge of the improvements in Benguet Province, including the construction of the Benguet road. The same resolution provided that the bed of the Benguet road should be so constructed as to be available for the use of a railroad. Another, of July 2, 1903, directed the laying out of the grounds in the town of Baguio, placing this work also under the direction of Major Kennon.

Under the head of "Improvements in Benguet Province" were at once organized three separate enterprises, viz, the survey and construction of the Naguilian road, the survey and improvement of Baguio, and the Benguet road. Mr. E. L. Heath was appointed chief engineer of the Naguilian survey and Mr. George H. Hayward of the Baguio improvements. Mr. Holmes was retained as chief engineer of the Benguet road. Work on the latter far transcended the others in immediate importance, and after starting the work on them the officer in charge established his headquarters at Twin Peaks and assumed the personal direction of work on the Benguet road in the middle of August, 1903.

From the terms of the resolution above referred to, it will be seen that the officer in charge had new conditions and new problems to meet. The road constructed up to this time had been for ordinary wheel transportation only, and was practicable for carts as far as Twin Peaks. Indeed, after entering the canyon, the road was a cart road rather than a wagon road. It had many steep adverse grades and turns too sharp for heavily loaded wagons drawn by more than a pair of animals. It was in no way fitted for use as the bed of a railway. On a brief visit to the road in July it was found that no surveys existed which could be utilized in making estimates for the construction of the road under the newly imposed conditions, and immediate surveys were ordered for that purpose. These orders anticipated the resolution of the Commission of December 23, 1903, directing the officer in charge to make his surveys, plans, and specifications for an electric railroad bed with a width of 14 feet.

In the expectation of securing a large number of workmen, executive and administrative departments were at once organized and put into practical working order. The leading features of these will be set forth below.

To provide for the prompt purchase and shipment of needed supplies, a purchasing and shipping agent was appointed in Manila, and at Dagupan another agent received supplies from the railway and forwarded them by wagon and cart to Twin Peaks.

A telegraph line from Twin Peaks to Dagupan was constructed by the Constabulary at the earnest request of the officer in charge, and all of the main camps on the road were connected by telephone, with headquarters at Twin Peaks. The telephone line was extended to Baguio, and enabled the entire work to be directed and controlled from the main office.

The Commission had expressed a desire to have the work completed as soon as possible, and earnest effort was at once made to increase the force of laborers. In June, 1903, the number of men on the road was 173. This number was increased rapidly until it reached about 4,000, which was considered the maximum number that could be worked to advantage at any one time without too greatly increasing the difficulties and cost of transportation of supplies. The work was so placed as to enable the camps to be moved forward en échelon, keeping the most remote camps at a distance of not more than 4 miles from a depot or from wheel transportation.

In the first distribution of the force, camps were organized at Twin Peaks, camps 3 and 4, and two intermediate points called 2½ and sub-3. At Camp 4 was a cliff 900 feet in length, on which a great amount of necessarily slow work had to be done. A considerable force was put at work on this cliff in order to prevent a blocking of the road when construction should reach that point.

The main force was concentrated between Twin Peaks and Camp 3, and by February 1, 1904, the latter camp was accessible by carts, thus lessening materially the burden of transporting supplies. The greater part of the force was then moved forward and camps established between camps 3 and 4. These movements of the working force were made successively. A camping place was selected in advance, and a detachment was sent forward to build the necessary quarters, storehouses, etc. The road work at the old camp completed, the new one was occupied, the men carrying tools and rations on their backs. In this way the removal was accomplished with the least loss of time.

Camp 4 lies 3.3 miles beyond Camp 3. In January, 1904, not a pick had been struck into the ground between these two points. By April 1 the road was open and in use for cart transportation to Camp 4. It required the work of a small party a couple of months more to put the road in shape for wagons.

In anticipation of the opening of the road as far as Camp 4 by April, 1904, and in order to make it available for use by the Commission in going to Baguio, a survey was made in January of that year of an existing Igorrote trail over Kias Hill. It was found that a horse trail could be built on this line with a maximum gradient of 15 per cent, and at an estimated cost of \$3,000. In order not to reduce the force on the Benguet road, the officer in charge requested that the appropriation for this trail be expended by the provincial authorities of Benguet. The line up Kias Hill was staked out by Benguet road engineers and the trail built for a trifle less than the estimated cost, under the supervision of Governor William F. Pack, who, on March 31, 1904, was the first person to ride over the trail and road from Baguio to Twin Peaks.

This trail has been in almost constant use since that date, and will continue to be useful for miners and others living in its vicinity.

Beyond Camp 4 lay some of the heaviest and most difficult work on the road. The distance from this camp to Baguio was 10.6 miles. By September 1, 1904, there were about 3,500 men at work between Camp 4 and Camp Colgan, distributed in five camps over a distance of 4.3 miles.

In November, 1904, Camp McElroy was established near the Baguio end of the line, to work downward, and in January, 1905, all available men were put on the grade between Camp Colgan and Camp McElroy, in provisional camps established under Foremen Dowd, Cook, Reid, and Boyd.

A wager had been made that the road would be passable for vehicles by the end of January 1905. The foremen and the working force generally took a keen interest in the outcome of this wager, and worked enthusiastically to win it. They were so successful that on January 29, 1905, the officer in charge drove from Camp 4 into Baguio in a calesa. At that time it was by no means a finished roadway, but required much work in easing grades, removing earth and rock from above, and in providing proper drainage. The amount of work which had been accomplished was enormous, and included the construction of new roadway from a point 1 mile below Twin Peaks to Baguio, a distance of 18.1 miles; the making of a rock cut between bridges 39 and 40, between Camp 1 and Twin Peaks; the maintenance and repair of the old road, its rebuilding in places, and the metaling of several miles of the lower road with crushed stone.

This work had been done between the dates of August 16, 1903, and January 29, 1905—that is to say, in seventeen and one-half months. At the former date, the most optimistic prediction allowed three years for the opening of the road, "if it could be done at all." Others said it would take twenty years of work, and some of the foremen on the road considered that they had "a life job."

The road as it stands is entirely completed and ready for the laying of track from a mile below Twin Peaks to beyond Camp 3. The work is of a permanent character. The bridges and culverts, except two at Twin Peaks, are of masonry and concrete. The curves and grades are practicable for an electric railway. Ample drainage is provided for the heaviest fall of storm water.

From above Camp 3 to Camp Reid the road will require some grading, straightening, and the construction of permanent bridges and culverts. In one or two places it may be found advisable to cross the river to secure better alignment, where the river makes sharp turns. This, of course, would require the construction of more bridges. The existing road is suitable for wagon transportation.

From Camp Reid to Baguio the road is laid out generally to prepare it for immediate track laying. It will need permanent bridges and culverts, and some modifications in grade and alignment on the zigzag between Camps Colgan and McElroy. The zigzag is on a solid basis and a secure foundation, the location having been so selected as to put it, as a rule, on solid rock.

Being a new road in mountainous country, the cost of maintenance for two years will be relatively high, on account of land slides, which will diminish in number and volume after the first rainy season, and which will have to be removed from the roadbed.

TOPOGRAPHY, ETC., OF BUED RIVER CANYON.

It would be hard to overestimate the natural difficulties of road construction in the Bued River Canyon. The engineer first in charge of this work had, at its beginning, no adequate idea of the character of the country, but in January, 1902, he seems in a measure to have realized the difficulties. He reported that "after the line once enters the mountains proper, bad cliffs, landslides, steep slopes, and constant ravines are met with. These natural characteristics will require masonry, dry walls, truss bridges, extensive rock cuts, and large fills. The further we proceed from the base of our supplies, the more expensive and difficult becomes our transportation. * * * The cliffs and steep slopes are dangerous to work on and men can work but slowly in such places. Because of the steep nature of earth slopes it is necessary in working out a roadway to go hundreds of feet up in places in order to obtain a proper slope that will not slide."

Mr. N. M. Holmes, in his report to include July, 1902, states:

"One of the chief difficulties to the rapid prosecution of this work has been the unstable and insecure nature of the entire country we pass over between the foot of the mountains and Laoacon. Slopes here stand at angles of such excessive steepness that the slightest disturbance of their natural condition starts a slide that may not check itself until hundreds of thousands of yards of earth, broken rock, trees, etc., have come down and been removed.

"It was naturally expected that slides would be constantly occurring on the upper slopes when the natural conditions had been disturbed, but the lower slopes, not being broken open or disturbed, were expected to hold.

"Experience has shown, however, that owing to the shattered, disintegrated, and unstable nature of the interiors of all these hills, the dropping of a boulder from above will gouge out a small hole below the road bed. This will fall away at the sides, and thereby increase in size. The more the hole increases, the larger will be the chunks dropping from its edges, until soon a huge slide is formed, which, extending upward, reaches the roadbed and the slopes above, demolishing what was previously firm bed and extending mayhap a thousand feet above.

"These slides occur in the most unlikely places, and with no previous indications generally of their insecurity. In fact, I have frequently noticed throughout this region where a piece of mountain side will seem to lose its grip on the neighboring slopes and suddenly slide out, carrying great boulders, trees, and rocks, leaving a huge gash in the face of the hill, and this in places not touched by the road, in places where the outer soil has never been disturbed, and even in the dry season when rain is not responsible for the disruption. The whole country is unstable and will continue so until nature has leveled these slopes down to permissible angles."

The Bued River is a stream upon which no calculations should be made prior to intimate personal acquaintance with its powers. During heavy rains it rises 30 feet and more in the narrow gorges, through which it tears with inconceivable velocity and power.

Mr. Holmes stated that about the time he took charge of the work—

"A heavy storm passed, and after passing left the road in a dilapidated state; bridges were gone, thousands of yards of slide had filled the completed road, large trees had been uprooted and cast down the slopes to bury themselves in the road, huge boulders had rolled down, and diverted watercourses had washed away outer slopes. In one place the Bued River had raised and washed away every vestige of road for nearly 2,000 feet, and everything was chaos."

By resolution dated September 30, 1902, Mr. J. W. Beardsley, consulting engineer to the Commission, was directed "to visit the scene of work in connection with the Benguet road construction, and make a thorough investigation of all matters connected therewith, and report fully to the Commission concerning the advisability of the present route, with recommendations for a change, if thought desirable, together with an estimate of the time and probable cost for completion of the road. * * *

In compliance with this resolution, Mr. Beardsley made a survey of the Bued River Canyon in November, 1902, and submitted his valuable and interesting report in December of the same year. In this report Mr. Beardsley states:

"The topographical and geological features of the Bued River Valley are remarkable. The elevated peaks are generally connected by ridges too narrow for a roadway. The slopes from these ridges to the peaks and the side slopes of both ridges and peaks are too steep for practical use. Frequently the connecting ridge is entirely washed away, and no feasible method of reaching the lower level exists. The construction of an intermediate trail along the mountain sides is impracticable on account of the remarkably steep slopes and the frequency of slides, which can not be avoided. These slides suggest that nature has not yet reached a state of equilibrium. Normal slopes for loose earth and rock vary from 30 to 35°; slopes for similar material in this valley are occasionally over 45°, and the material is held in place principally by its covering of vegetation. These steep slopes with their resulting slides are due to (a) seismic disturbances, (b) chemical formation of rock, and (c) climatic conditions. The original rock formation shows frequent faults and displacements, and the stratification lies at all angles between horizontal and vertical positions. The result is that some of the rock is broken into comparatively small fragments, and other portions less fractured rest on a stratified plane too steep for stability. Considerable iron pyrites is found in the joints and seams, which upon exposure disintegrates. Excessive rainfalls, together with a high temperature, assist in causing a rapid disintegration of such rock, and also, with its accompanying slight erosions at the top increasing to a large erosion at the bottom of these slopes, gradually undermine the upper portions, and a slide results. The seasons of no rainfall permit a protecting growth of vegetation over the slides, and abnormal slopes are obtained. Slides frequently occur during the rainy season on portions of the slopes apparently well protected by vegetation, and during the dry season these slides are of occasional occurrence over portions not so protected. No construction can withstand the effect of these large landslides. The material is angular and disintegrated.

broken rock. The rock outcroppings show a hard conglomerate in the lower portion of the valley, consisting of water-worn pebbles and boulders cemented together with volcanic rock. A small amount of limestone and sandstone was encountered. Above the Combau River the rock is more volcanic. Above the Balatic some granite rock and above Camp 5 marble outcropping were found. Nearly all rock formation is shattered, and shows the action of intense heat. The folds are sharp and abrupt, and displacements frequent. Planes of fracture are vertical as often as horizontal. The faults and veins are filled with mineral deposits. Iron pyrites occurs in practically all of the rock, and is doubtless one of the causes of the rock's disintegration. No outcroppings were seen which indicate a good quarry for dimension stone. Where the rock appears fairly solid it is not uncommon to have a rock slide of several hundred tons occur after a cut has exposed the rock to weathering effects for a few months. Nearly all of the rock is difficult to drill.

"A few hot springs are found along the line; also a few springs heavily charged with lime and other minerals, and several larger springs of potable water."

To this may be added only that a close acquaintance with the country developed the presence of limestone in great masses suitable for dimension stone and furnishing an excellent quality of lime.

LOCATION.

The selection of this route to Baguio, by way of the Bued River Valley was due to Charles W. Mead, civil engineer. It is evident from his first estimate of the cost that his investigation was made in a superficial manner. His judgment in the matter of selection of route received the qualified approval of the consulting engineer to the Commission, who in the report above quoted states:

"Conditions existing in the Bued River Valley were carefully inspected in advance of the survey party and the general location of the route selected. Considerable information was obtained from men familiar with various other routes from Baguio to the sea. The consensus of opinion was that all routes involved steep slopes and that expensive construction would be necessary for a roadway. A portion of these routes was passed over and personally inspected from elevated points.

"The general appearance of Bued River Valley compares favorably with any of the other routes.

"Of the 35 miles of road required to reach Baguio, the Bued River route has remaining to be built about 12 miles. A horse trail has been constructed over about one-half of this distance; also a terminus of this route is the railway rather than a sea port. It was therefore considered unnecessary to make a reconnaissance survey of any other valley under existing instructions."

* * * * *

"The first impression from a detailed examination of the valley is that no feasible or practicable route for a roadway exists. However, where the canyon has vertical walls the rock is solid and a durable roadbed can be excavated. The landslides rarely occur opposite each other, and generally a bench exists on the opposite bank, so that slides, with a few minor exceptions, can be avoided by crossing the river. This lower route presents many difficulties—the most expensive work remains to be done, the first cost will be large, and maintenance for a few years will be expensive. But it permits more uniform grades, and it is believed to be the safest, quickest, and, in view of the work already done, the cheapest route from Manila to Baguio. The lower route, therefore, was selected for the survey line, and is recommended as the route to be developed from the Combau River to Laoacan."

Leaving out of the question the difficulties and cost of construction, the opinion is ventured that the Bued River Canyon does afford the best and shortest route from the lowlands to Baguio. It connects with the existing railway at Dagupan, from which point, by the present roundabout route, the distance to Baguio is 49½ miles. The journey from Manila to Baguio has been made in a single day with fifteen and one-half hours' travel, eight of which were consumed on the 122 miles ride over the Manila and Dagupan Railway. The scenery from Pozorrubio is of incomparable beauty. Mr. Beardsley in the report quoted remarks:

"The scenic features from the Bued River Valley are varied and interesting. The adjacent mountains rapidly rise 3,000 or 4,000 feet above the valley, with occasional peaks reaching 6,000 or 7,000 feet. The river bed is dotted with huge boulders. The dark and narrow canyons suddenly expand into broad basins containing luxuriant tropical vegetation; vines and mosses festoon the forests; several picturesque falls are seen; the river is a continuous series of rapids. The pine belt is entered a few miles above the Balatoc River, and as the upper stretches of the road are reached the tree ferns and pines are found growing side by side. Scenic features are not within the scope of this report, but it is difficult to refrain from predicting that upon completion of the roadway this route will present attractions to the artist, naturalist, and traveler surpassed by few in the world."

The Benguet road starts from Bubuan, a point on the old provincial road from Pozorubio to Alava and about 3 miles from the former place. The road winds across a flat or slightly rolling country in a generally northerly direction for about 7 miles to the Bued River Canyon. From here it follows the river to Baguio.

The original plan seems to have been to follow the river as far as the mouth of Emerald Creek and from thence to develop up the slopes to Laoacon. Construction was begun at Baguio and continued on this line to the first crossing of Emerald Creek, but was abandoned on account of slides which carried away the roadbed.

In July, 1903, with the road open to Twin Peaks, the problem before the officer in charge was simply to join that point and Baguio by the best route possible. No other than the Bued River line could be considered by him. His orders were "to push this road to completion." Other lines had been examined, this one selected, approved, and recommended by the best expert opinion at the command of the Commission, and a considerable amount of money expended upon it.

Careful surveys were begun at once by five different parties to obtain necessary topographical data and to enable estimates to be made of the probable cost. The location as it exists was selected from such data and from repeated personal inspections of the officer in charge of the whole country. There could be no question as to the location of the road as far as Camp 4, as no alternative route was possible.

At Camp 4 it was thought that development might be obtained up the sides of the valley at that point to the summit of the long ridge extending from Laoacon to Kias Hill. A survey was made to determine the practicability of this line. It was found that to reach the summit, which is distant about $1\frac{1}{2}$ miles from Camp 4, it would be necessary to build a road 9 miles long, with an average gradient of 6 per cent. The character of the ground was exceedingly broken, and it is doubtful whether a stable roadbed could have been found. The engineer making the survey reported this line impracticable.

The plan of making this climb of about 2,800 feet, vertical height, by means of a cable railway was also considered. At first sight this scheme appeared attractive, but a close examination of the ridge showed that construction would be more costly than at first presumed, with heavy cuts and fills, many curves and adverse grades. The distance from Camp 4 to Baguio would be increased by nearly 5 miles. The road could not be utilized until the railway was in active operation. The line through the valley, when completed, could be operated by a single class of motive power and is much shorter. It could be used as a wagon road at once for the convenience of residents of Baguio and others, and when finally constructed would be in all respects the better location. In addition, the instructions governing the officer in charge were to build a wagon road which might subsequently be utilized for laying the track of an electric railway. For these reasons the plan of a cable road was not adopted.

It was thought possible that a location might be found on the eastern slopes of Mount Santo Tomás. Surveys were made to ascertain the feasibility of such a line. The country was found to be too broken and rough, the soil and rock unstable, the route impracticable.

The utilization of the abandoned portion of the earlier constructed upper road was considered important. The officer in charge, accompanied by the chief engineer of the road, the chief engineer of Baguio improvements, and others made a careful inspection of the old road and of Emerald Creek Canyon. The general opinion was that this route was impracticable on account of the unstable character of the slopes in the Emerald Creek valley, which appeared to present no solid rock or other foundation upon which to build a road that would be permanent. A slide in this valley "absolutely prohibited this route." With reference to this section Mr. Beardsley in his report states it to be "impossible on account of the landslides." Mr. Holmes, in his report for the year ending June 30, 1903, in reference to this place, stated that "because of the instability of these side slopes, the frequent slides and uncertain nature of the rock, 2 miles of line at the north end was forced to be abandoned, and by a series of loops and steep grades the lower lines of the slope gained, and a route chosen through solid rock down to the river. The chief disadvantage of this lower route is the frequent crossing of the Bued River, requiring expensive long-span bridges, and a very materially steeper grade than would have been necessary in the upper route, but this is largely compensated for by the increased stability and general safety of this line as compared to the higher one." Mr. Beardsley recommended "that the road between the Combau River (Camp 3) and the upper falls of the Bued River be adjacent to the Bued River in order that advantage may be taken of the conditions existing on either right or left bank."

It is believed that the unstable ground might be avoided by a tunnel or a deep through cut. Either would have proved very expensive, much heavy work in the development would have been required, and the exit from Emerald Creek would have proved a difficult and costly problem, with side cuts in a high mountain of exceedingly unstable character. After much careful study of this alternative it was finally and definitely abandoned.

The only remaining exit was by the slopes lying west of Laoacon. So far as known

Mr. Beardsley was the first to suggest this route. In August, 1903, Mr. George H. Hayward, chief engineer, Baguio survey, was detailed to make a careful survey of all the country between the foot of the horse trail and Baguio, with instructions to connect, if practicable, with the old road below or at Laoacon. He found connection below Laoacon to be impracticable, and the only feasible location took the road to the junction of Laoacon Creek with the main river and up the eastern slopes of the canyon between Turks Head and the falls. The slopes seemed stable, but they were limited in extent and the elevation to be gained was considerable.

This first tentative location involved many loops, sharp curves, and deep cuts, and was not adopted, but the possibility of a road was demonstrated. More elaborate and detailed surveys were made later and a paper location made, which was afterwards laid out on the ground. This location is probably in its general features as good as can be found and the cheapest of construction. The ground was gone over many times before final decision was made. The roadbed is secure and on solid foundation.

From the mouth of Laoacon Creek two lines were possible. One continued a short distance up the river valley and followed a ridge to the low divide back of the schoolhouse in Baguio. This line was apparently easy and inexpensive, with light cuts and fills and no costly structures. It was the short, direct line into Baguio, the distance being about 24 miles. The other line turned back, ascended Laoacon Creek to the village and then joined the old road. This line involved heavier work than the other. The ground is more unstable and the distance to Baguio more than twice as great. To be sure, much of it would be on the old road, but that road is so tortuous, being laid out without regard to curvature, with many sharp turns and adverse grades, that the cost of reconstruction would far exceed that of the first-named route, which was adopted, leaving the old road for local transportation.

From Dongon, or Camp 1, at the entrance to the canyon, the location to the south is open to criticism. The route via Pozorrubio is circuitous, and was adopted probably because it was the shortest route from Agaat, where work began, to the existing provincial roads, and from Agaat to Babunan construction was easy and the work light.

The difficulties began to be met on advancing north from Agaat. Between this point and Camp 1 occurred the first discouraging slides and washouts. This is the section upon which thousands of dollars have been spent annually for repairs. To make it available for railway purposes new location and new construction would be necessary.

On the 7th of October, 1903, the officer in charge recommended its abandonment for the above reasons and on account of costly maintenance, steep, adverse grades, and liability to slides and washouts in that part and near the mouth of the Bued River Canyon. On the 26th of the same month a flood in fact again washed away several hundred yards of this section.

The Bued River flows southwest in the general direction of Dagupan. The valley on the west side is open and flat and seemed to afford a good natural location for a roadway. Surveys were made over this country and the cheapness and practicability of construction demonstrated. The ground appeared to be very favorable, and the surveys proved that a road could be built from Dagupan to Camp 1 with a maximum gradient of 1.3 per cent, touching San Fabian, which, while it has no harbor, has an open roadstead, a usually calm sea, and could be utilized as a shipping point, rendering shippers over this route independent of overland transportation from Manila. General Wheaton's expedition landed there in 1899. The proposed line by way of San Fabian would materially shorten the distance from Dagupan to Camp 1, affording incomparably better alignment. By the present route, following the old provincial roads, the distance between these points is 26.4 miles. As suggested above, this line was probably originally selected, despite its length, because but 7 miles of new construction were required to connect Camp 1 with the provincial highways, which, by way of Pozorrubio, lead to Dagupan. The San Fabian route would require 11 miles of new construction, but on the other hand it could be built cheaper, it would be a permanent road, inexpensive to maintain, and above all it would reduce to about 16 miles the distance from Dagupan to Camp 1.

The Benguet road, as at first planned and as proposed by Mr. Beardsley, was about 35 miles in length, and the total distance from Dagupan to Baguio 58 miles. Departures made from those plans and changes in final location shortened the length of the Benguet road to 26.53 miles, and the distance from Dagupan to Baguio to 49.5 miles.

By the San Fabian route the last-named distance would be about 39.5 miles.

These several routes are shown in the map hereto attached as Exhibit J. c

The air-line distance from Dagupan to Baguio, as determined by triangulation, is 30.777 miles.

CONSTRUCTION.

The descriptions of the Bued River Canyon above given fall short of rather than exceed the truth as developed by the actual work of construction. The general plan was to keep the roadbed, as far as possible, on solid rock and above high-water mark. There were

* Maps, photographs, etc., on file in the Bureau of Insular Affairs, War Department.

places where no solid foundation could be found and where constant and inevitable slides could be predicted. In such cases the road was perforce carried across the river where, in general, safe ground was found. This, of course, necessitated the frequent use of bridges of considerable span. There are 11 bridges over the Bued River in a distance of 11 miles, with numerous smaller ones over the tributaries of the main river.

To make the road safe required the removal of vast quantities of loose rock and earth from above the grade, and which were liable to slide. The cut made for the roadbed increased the liability to slides, although the earth was removed to a slope which seemed stable. In one case the surface was so treacherous that it was stripped and cut back for a height of 800 feet above the grade line. At this point the canyon walls seemed equally bad on both sides of the river, and the only reason for the selection of the present location was that the mountain on that side had less elevation than the other. The stripping of high cliffs greatly increased the cost of construction. Had the rock been solid, the road could have been built for very much less money. Cliffs of broken rock had frequently to be cut back to an angle almost as low as for earth.

Slides are characteristic of all mountain roads, in all countries and climates. After gashing the face of a mountain to get a roadbed, frost or rain will loosen the rocks or earth above and they are bound to slide until an angle of repose is reached. The heat of the sun by day and the cooling at night produce sufficient motive power to loosen boulders and to produce slides in ground so unstable and of such steep slopes as is found in Benguet. No permanent road was possible in the Bued River Canyon until many of these masses of earth and rock were removed. In blocking out the roadway, the rule was adopted to remove enough to make the road safe for travel during the dry season. In places where a permanent road could be obtained by blasting only, it was finished up at once. When otherwise, the rough roadway was left for the rainy season and the action of the elements upon it. No permanent work was attempted until the roadbed and slopes had been subjected to the effects of erosion during at least one rainy season. The rainfalls of Benguet are heavy; in July, of the present year, the rainfall was 18 inches in twenty-four hours. The effects of such rains can readily be imagined; every year the slides on newly opened roads have been enormous. As the removal of the masses of earth and rock was necessary, it was deemed wiser to let the forces of nature do the work than to resort to the only other method available, which was their slow and costly removal by pick and shovel. Moreover, the elements usually cleared everything away to a stable angle or to solid rock not liable to slide.

Near Camp Colgan the cliff required stripping to a height of 312 feet to obtain a slope of 1 to 1, which was thought the least slope allowable for the ground. To effect this in the dry season, Copper King Creek was diverted and brought by a trough to the point where the cut was to be made. Thousands of tons of loose earth and rock were brought down by this hydraulic method, and formed a talus reaching far into the river bed. Manifestly to clear this out with pick, shovel, bar, and dynamite would be a slow, costly operation. A provisional road was therefore made over the scree, which was used during the dry season. The first heavy rainfall produced a flood which cleaned the place expeditiously, completely, and at no cost to the government. The rock on which the permanent road is built was exposed and the ravine of Copper King Creek, which had been filled with the fallen boulders, was entirely cleaned and ready for the bridge planned to cross it. A rainy season was especially valuable in this way and also in others. Rifts and fissures across the roadway, which had been filled by falling rock when the road was blocked out, were cleaned out by floods and the permanent bridge, culvert, or wall subsequently constructed on solid rock foundation.

After one rainy season the roadbed was thoroughly tested and the danger from slides eliminated. Small slides may and do occur after one such season, but they do no damage to the roadbed and are cheaply and easily removed.

Under the requirements of the resolution of the Commission, the line was laid out in tangents and curves, and the grades were kept within limits practicable for electric traction. The maximum curvature corresponds to a radius of 82 feet. This occurs in one place only. No reverse curves appear, a tangent at least equal to a car length being placed between curves. The line was laid out with spiral easements. There are no adverse grades on the permanent line; a few short ones occur to reach temporary bridges. The maximum gradient is 9 per cent, of which the longest stretch is somewhat less than 1 mile in length, above Camp Colgan. This can not be economically avoided.

In many places it was necessary to fill ravines or fissures, which narrowed at the bottom in such a way that it was difficult to obtain secure foundation. The method adopted in such cases was to build a concrete beam, reinforced with steel bars, across the bottom of the fissure and resting upon rock foundations at the sides. A dry wall with a slope of 1 to 4 was built on this and backed by rock fill. When the wall was carried high enough to reach other solid foundation, a new direction was taken with the ends resting on the new foundation and on the fill below. Where the fill was in a natural water course, ample ditches were constructed back of and on the fill to carry the water to a point on the road below, to be discharged through culverts.

These fills have stood the test of two severe rainy seasons and are believed to be a satisfactory solution of the problem. The largest of these walls is 79 feet in height, and with others is shown in photographs Nos. 116, 122 to 129, inclusive.^a

For temporary use such fissures are crossed by "half bridges." The outer posts were set on small benches blasted from the rock, dowelled to it with iron pins and set in cement. The caps were drift bolted to the posts and to the rock on the side toward the cliffs where they were laid in trenches blasted out of the rock, and drift bolted to it. These structures are shown in photographs 171 and 172, hereto attached.^a

In the part of the road which is covered with broken stone a foundation course of 5 inches and a wearing course of 4 inches were contemplated, the whole to be bound with screenings. This was not wholly carried into effect, and a portion of the road only was built in this manner. Ordinarily the rock roadbed was covered with gravel. This was tamped well and made as good a road as was deemed necessary in view of the ultimate purpose of the roadway.

The normal width of roadway is 14 feet. In transverse section the slope on finished work was 1 to 24. This is greater than the usual slope, on account of the excessive rainfalls, steep grades, and the necessity of getting storm water into the ditches as soon as possible. The slope was invariably toward the uphill side, whether on right or left curves. In track laying the elevation of the outer rail may be obtained in ballasting, and drainage assured. No provision is made for ditches on the side away from the hill. All storm water is taken to the single ditch; as the road is narrow there was no necessity for ditches on both sides and construction was far cheaper.

Ditches were paved with stone, and, where the soil was of a porous nature, the stone was placed in a bed of puddled clay to prevent the undermining action of water percolating through and under the roadbed. Culverts were located above fills and walls, and generally in places where the water would be discharged over solid rock.

Retaining walls and abutments, where likely to be subjected to the action of water, were laid in cement mortar. The wall at Cliff 1, near Twin Peaks, is built from bed rock to a distance of 2 feet above probable high-water mark, of large boulders imbedded in concrete and faced with concrete 1 foot in thickness. Above is a dry wall with rock backing. The lower part of this wall is exposed to the full sweep of the river during floods. See photographs Nos. 112 to 115, inclusive.^a

Many retaining walls were laid in lime mortar, an excellent quality of lime being manufactured on the works at a cost of about 35 cents per barrel. Retaining walls were built on benches blasted from the cliff, of sufficient width to give a stable foundation.

The wooden structures which were first put in the road soon began to rot. Some had failed from this cause in a single year. This was especially the case where green timber of native woods had been employed. It was decided to make all bridges and culverts, of moderate span, of masonry and concrete, and these were built on the completed portions of the road, where no further changes of grade or modifications of alignment would be required. Standard concrete culverts of 1, 2, 4, 32, and 50 feet span were designed and constructed. For short spans the arches were semicircular; for the larger ones, segmental. They are illustrated in the photographs accompanying this report, Nos. 136 to 152, inclusive.^a

Concrete for arches was made of one part cement, two parts sand, four parts broken stone. When subjected merely to compression, as in walls and abutments, the proportions were one of cement, two of sand, and six of gravel or broken stone.

In constructing concrete arches work was begun from both ends; board partitions were made normal to the curve of the soffit, of height equal to the depth of the arch, and extending the full width of the bridge. The spaces formed were filled with well-tamped concrete. When the concrete set sufficiently to retain its shape the partitions were removed and the operation repeated. The arch was thus formed of large concrete voussoirs reaching entirely across the bridge.

Only for the portions of the road not actually ready for track laying, culverts were made of dry wall and plank. In some places cement piping was used, but in the heavy rains of Benguet they are useful only when the drainage area is very small.

None of the bridges across the Bued River are permanent structures. Having in mind the ultimate object of putting an electric railway on the roadbed, and the necessity for its immediate use for wagon transportation, bridges of a temporary character were built with a view of replacing them with permanent structures when actual railway construction shall begin. The great cost of transportation under existing conditions prohibited the erection of the steel bridges which will eventually be found the most economical for this line.

Being temporary structures when the ground permitted they were placed off the line on which the permanent bridges should be built, the object being to leave space for false works and to keep the road open as far as practical during the time occupied in the new construction.

For spans up to 75 feet trusses were built, usually of the Pratt type; the greater number are deck trusses. All are well braced and strong. The photographs will sufficiently show the details of construction. See Nos. 151 et seq.^a

^a Maps, photographs, etc., on file in the Bureau of Insular Affairs, War Department.

The bridges used almost entirely for crossing the main river are of the suspension type. These bridges are cheap, quickly constructed, and sufficiently strong for ordinary traffic. One of them bore the weight of 21 large American mules and their packs without perceptible straining of its members. The special feature in these bridges is the substitution of a portal for the usual towers. The cost of lumber was exceedingly high. At the bridge below Camp 4 a trestle of about 50 feet in height would have been required to serve as a tower. The experiment was tried of building a trestle to the height of the roadbed and of placing the portal on its cap. In the first bridges the portal was hinged to the cap, but in the latter bridges the cap of the trestle and sill of the portal were driftbolted together. Two doubled 1-inch steel cables were used, one on each side, with suspenders of $\frac{1}{2}$ -inch steel cable doubled. Each cable and each suspender was spliced end to end. The cables passed around large blocks which were adjustable by screw threads cut on the rods connecting with the anchorage. For anchorage, wrought-iron bars $1\frac{1}{2}$ inches in diameter were let into holes of about 15 feet in depth drilled into the solid rock. A chamber was made at the foot of the hole by the explosion of a small quantity of dynamite. The bar was split at the end and spread in this chamber and the hole grouted with cement mortar. The bars were bent to the angle required and bolted firmly to a heavy beam. Finally they were imbedded in cement. Arrangement of the anchor bars is shown in the photograph herewith, No. 156, and also in drawing, Exhibit M.^a

When solid rock was not available screw threads were cut on the bars and they were let through a steel I-beam and secured by washer and nut. This was buried in a heavy bed of concrete and rock.

These bridges were provided with lateral bracing under the flooring; the stringers of 3 by 12 lumber, were made to overlap, and were spiked together to assist in reducing undulation under live loads; the side rails were in the form of a Warren truss to distribute the load locally. The spans vary from 110 to 185 feet. Time of construction was about six days.

A great deal of work was done below Twin Peaks under the direction of the officer in charge. More than a mile of the road was relocated and newly constructed. Between Camp 1 and Twin Peaks there were two bridges crossing the Bued River. In October, 1903, the lower bridge, No. 39, was washed away; a temporary bridge was immediately constructed, but the same liability to loss remained, and a careful study of the ground, in order to find a better bridge site, resulted in the opinion that it would be better not to cross the river at all. The approaches to the bridges were impossible for railway purposes and the cliff afforded a good alignment and an everlasting roadbed. Camp 1 $\frac{1}{2}$ was therefore established under Foreman Hann and a roadbed was blasted from the cliff between the two bridges. It was subsequently learned that this had been the original plan, but on account of the amount of work involved the bridges had been put in as a temporary measure. The original bridge, No. 40, was washed out in the first rainy season and was replaced by a Howe truss of 135 feet span. As it turned out, the rock cut avoiding the bridges cost less than the temporary crossing of the stream.

Below Dongon the road passes close to the river. This section has been subjected to serious damage from frequent washouts and slides, requiring constant repairs; indeed, the cost of the maintenance and repairs of this portion of the old road has been a considerable draft on the road appropriations; many bridges and culverts were replaced; washouts were repaired by blasting a roadway from the face of the cliffs; the resulting slides of the next rainy season were cleaned away; several miles of roadway were metaled with crushed stone and gravel; old ditches were cleaned out and new ones made; new culverts were put in; certain sections of the road were rebuilt; in one instance a new road a mile in length was constructed, and the road in general put in good repair.

ORGANIZATION.

The arrival of large bodies of men on the road in July, 1903, made essentially necessary an organization that would enable them to be supplied with unfailing regularity and by which their labor could be directed and controlled. For this purpose several departments were organized and put into operation at once, each being under a responsible bonded officer.

Engineer department.—At the head of the engineer department was a chief engineer, whose duties were, under the direction of the officer in charge, to design and construct the necessary bridges and culverts, to lay out the line of the road, and to make all necessary surveys. He was provided with assistants who were assigned to residences on the road, covering its whole extent. The transitmen, levelmen, draftsmen, etc., were under his charge. The chief engineer had immediate supervision of bridge construction and of such foremen and mechanics as blacksmiths, carpenters, masons, etc., as were necessary to carry on this special work. Under him also was the maintenance department, with the necessary foremen and laborers, whose duties were to keep the completed road in repair.

^a Maps, photographs, etc., on file in the Bureau of Insular Affairs, War Department.

The chief engineers who served under the officer in charge on the Benguet road were: N. M. Holmes, June 1, 1903, to October 31, 1903; D. S. Williams, November 15, 1903, to March 20, 1904; A. H. Perkins, April 10, 1904, to November 5, 1904; Geo. H. Hayward, November 6, 1904, to date.

Construction department.—The working force was organized into units, each under its appropriate foreman. Of the latter there were four classes. A first-class foreman had charge of 1,000 men, more or less, whose work he directed; to him was intrusted also the general charge and supply of his men.

A second and a third class foreman had charge of 200 and 100 men, more or less, respectively. The latter number was considered as a working unit. The third-class foreman had under him 2 fourth-class foremen. Together they were required to have their men ready for work at the hour designated, to keep them at work, to instruct them, and to supervise their labor. Under the third-class foremen were also native capataces, or overseers, each of which had charge of 20 or 25 men. The capataz was ordinarily of the same race as the laborers themselves.

By this organization different squads were kept intact and worked as units, habitually with the same overseers and foremen. Men of the same class or race were kept together.

This organization was changed but slightly during the continuance of the work. In practice the first-class foreman had charge of a camp and was responsible for its administrative control and police.

The actual work of construction was carried on under the direction of the camp foremen, who were responsible solely to the officer in charge for the execution of the work intrusted to them. Limits were assigned to each, and considerable emulation was displayed in regard to the character and progress of their work, and pride shown in the appearance and comfort of their respective camps, the quality of the food served in the mess, etc. This rivalry was not diminished by naming the main construction camps after the foremen in charge of them.

Under the camp foremen were all of the mechanics needed for the prosecution of his work, including powdermen, blacksmiths, tool sharpeners, and the mechanics needed to operate and repair the machinery, hoisting engines, etc., employed on the works.

Charcoal for use in the blacksmith forges was burned in the neighborhood of the camp.

The camp foremen reported daily in writing to the officer in charge the number of men working or not, the sick, etc., accounting for every man assigned to his camp. The report included a statement of the progress made, the work on which engaged, the number of feet of rock drilled, and the amount of powder, dynamite, fuse, etc., expended. These reports were used to check ration and property returns. They were made out by the camp clerk, usually, and signed by the camp foreman. The camp clerk was also mess officer and received and issued the rations intended for the employees of the camp, besides having direct personal supervision of the foremen's and Americans' messes.

To avoid the oriental tendency to improvident consumption and to prevent waste the rations for Filipinos, Chinese, and Japanese were issued daily from the camp storehouse by the mess steward or camp clerk in charge of supplies to the capataces from the oriental kitchens, only the prescribed quantity of each article being measured out for each man actually present. In like manner daily supervision was maintained over the Chinese cooks of the American messes.

At headquarters and at Twin Peaks separate messes were authorized for the officers and the clerical force of the road. In these the ration was supplemented by additions purchased from funds contributed by the individuals composing the mess, and a variety obtained not afforded by the regular ration.

Property department.—A great quantity and variety of property was required in the construction of the road, as steam boilers, drills, hoisting engines, tools and machinery for repairs, masons', carpenters', miners', and other tools for the use of a force of 4,000 men. Among so many irresponsible parties a system of control and responsibility was necessary to protect the interests of the government. In August, 1903, property regulations were drawn up and issued for the guidance of the force. These regulations and their amendments are appended as Exhibit A.

The two main depots of supplies were at Twin Peaks and Camp 4. A bonded property officer was accountable for all property on the road, and had direct charge of one depot. A bonded assistant was in charge of the other. The foreman in charge of a camp or party was personally and pecuniarily responsible for property issued to him.

Some property was lost in slides or by falling over cliffs, but on the whole there was very little loss to the Government, as the regulations were strictly enforced in all cases.

The explosives used on the road were dynamite of two grades, one containing 75 per cent and the other 40 per cent of nitroglycerin—Judson powder and black blasting powder—choice being made according to the character of the work or results desired. When under full headway in the dry season, the weekly consumption averaged, in round numbers, about 2,000 pounds of dynamite and 10,000 pounds of black powder.

The main depots for the storing of explosives were at Twin Peaks and Camp 4 in magazines remote from the main buildings. The magazine at Twin Peaks was a well-constructed log building erected under the direction of Mr. Holmes. Over it was a constabulary guard. At Camp 4 the magazine was a grass building. A guard was over this also. In both cases the ground was well cleared in the vicinity, all grass being kept closely cut. Near each camp small powder houses were built and kept under guard to prevent loss through fire or theft.

The property officers of the Benguet road were: J. J. Murphy, July 15, 1903, to November 30, 1903; L. F. Heney, December 1, 1903, to June 30, 1905.

Commissary department.—The commissary officer had charge of the receiving and issuing of the authorized rations on returns signed by the camp foreman and approved by the officer in charge or his assistant. He was aided by assistants, clerks, and laborers, the butchering department being under his direction. The assistant property officer at remote camps was also an assistant to the commissary officer, the dual duties being performed by the same person.

The Bued River runs through a wild and entirely unsettled country. Not a single settler had erected a hut in the canyon. All employes of the road had therefore to be fed by the government. The nearest base of supply was Manila. Shipments were made by rail to Dagupan and were from there hauled in carts 32 miles to Twin Peaks.

In July, 1903, there were practically no supplies on hand. Laborers began to arrive in large numbers. Without food they could not work and would not stay. Means were at once devised to feed them regularly. A ration list was made out for each class of laborers—one for Americans, including all Europeans; one for Filipinos, including Chinese, and one each for Japanese and Sikhs. A table showing the components of the ration issued to the several classes just specified and the quantities of each article authorized, by ten-day periods for one man, is appended as Exhibit B.

The American ration closely followed that issued to the United States Army, though it was perhaps a little more liberal, in order to support a man engaged in ten hours of arduous work daily. The cost of this ration was about 45 cents (gold) per diem.

Before the date last mentioned the native ration had consisted of rice only. A meat component was ordered, alternating with fish. Lard was used in cooking rice—the principal part of the native ration. At first 2 pounds of rice were issued daily, but this was found to be more than necessary and the amount was reduced to 1½ pounds. In the colder camps in the high elevations near Baguio the latter quantity proved insufficient, and for natives employed in those camps the daily allowance was 2 pounds.

The Japanese ration was the same as that of the Filipino except that two or three of their own staple articles of food were added. These were inexpensive and helped to make the laborers more contented.

For the Sikh watchmen a special ration was issued, their religion prohibiting them from eating meat which had not been butchered in a certain manner.

The cost of the oriental ration was about \$5 (gold) per month.

The ration provided was ample, afforded a sufficient variety, and allowed practically no savings to be made. In other words, it seemed just enough to sustain the men.

The commissary department, in addition, contained a few articles of luxury—such as tobacco, canned milk, butter, and preserves—which were sold at cost price with cost of transportation added.

Issues of rations were made every ten days. Returns were prepared by the camp foreman, deductions and additions being made for men who had left or joined the camp during the preceding ten days. The returns were sent to the officer in charge, where they were checked by comparison with the foremen's daily report, approved, and referred to the nearest commissary depot for supply. The foreman or his agent, usually the camp clerk, checked the issue and receipted to the commissary for the exact supplies received. The ration return with the receipt attached was a voucher on which the commissary officer dropped the articles from his return to the auditor.

It will be observed that this is a slight variation of the army system. It worked well, and subsequent to its adoption no camp, however remote, was ever without rations. No one who did not visit the country before the road was constructed can form an adequate idea of the difficulties of supply. The upper camps were reached only by perilous trails which ascended and descended the precipitous slopes of the canyon walls, over cliffs, to scale which ropes and ladders were necessary. The river at low water was forded; at high water rude bridges or logs were used. A man's life depended on sureness of foot and coolness of head. In hundreds of places a misstep meant death. The mountain Igorrotes were chiefly used as packers, and a large number of them were employed. The amount of work and foresight involved in the supply of rations may be judged by the fact that it was necessary to distribute along the road about 60 tons of provisions each ration day. Of a single article (rice) more than 60,000 pounds were distributed every ten days.

The commissary officers of the Benguet road were: Charles F. Moore, July 15, 1903, to August 15, 1903; J. H. Hazeltine, August 21, 1903, to May 17, 1904; E. F. Ambrose, July 2, 1904, to June 15, 1905.

Disbursing office.—Under the administration of Capt. M. W. Rowell, Eleventh United States Cavalry, disbursing officer of the Benguet road from November 16, 1903, to the practical conclusion of the work the disbursing office attained a high degree of efficiency.

All accounts against the road were paid by this officer. The pay rolls for each camp were prepared at the end of the month from the time books forwarded by the camp timekeepers. The amount due each man was placed in an envelope and the pay envelopes were taken to the camps by a bonded agent and distributed. Payments were usually made at the noon hour, at night, or on Sunday in order to interfere with the work as little as possible.

Open rolls were also kept in the office for the payment of men discharged or leaving the road. The ebb and flow of the Filipino laborers made this a serious task, as hundreds of natives would enter or quit the works during the month, leaving the total number nearly constant.

All natives were paid individually, each one personally receiving the entire amount due him from the road. This was necessary to prevent "grafting" by labor agents or other middlemen. These payments varied from 25 cents upward. The total amount disbursed by Captain Rowell amounted to ₱2,490,108.75, a great part of it being in the small sums alluded to. The clerical labor involved was enormous.

The time-keeping department was under the immediate direction of the disbursing officer, to whom the time reports were submitted direct by the timekeepers of the several camps. In the execution of their special duties they were independent of the camp foremen. Owing to the scattered condition of the road forces, a uniform system was required by which the working time of all employes might be accurately reported. A committee was appointed to draw up rules to this end, and on the recommendation of this committee the time regulations were chiefly based and issued in November, 1903. A copy of the regulations, in which are embodied such amendments as actual experience suggested, is appended as Exhibit C.

One timekeeper was assigned to each body of 200 men, as it was found physically impossible for one man to keep track of a larger portion of the force. Workmen were checked at least four times daily, and as the checking involved the scaling of the dangerous cliffs, at times hundreds of feet above the grade, the timekeepers had to be active men physically, as well as cool headed and of some clerical ability.

In addition to his duties as disbursing officer, Captain Rowell for a time had supervisory charge of the property, commissary, and transportation departments. In the absence of the officer in charge he also assumed the direction of affairs on the road.

Transportation department.—The subject of transportation was vital and was the object of unceasing care and vigilance. All supplies were hauled from Dagupan to Twin Peaks over the provincial roads and the completed portions of the Benguet road, a distance, at first, of something more than 32 miles. Later, when the warehouses were moved to Camp 4, the haul was about 39 miles. Most of this hauling was done by natives, who used the ordinary carts of the country. The provincial roads were bad and the cost of transportation high. In July, 1903, the price asked for hauling supplies from Dagupan to Twin Peaks was about ₱80 per ton. With the object of reducing this expense twenty escort wagons were obtained from the Quartermaster's Department of the United States Army and Chinese bullocks were purchased. Two wagon trains were organized, with the necessary wagonmasters, corral bosses, etc. This plan worked very well and reduced materially the cost of transportation. The natives, on finding that the road was not absolutely dependent on them and their carts for the transportation of supplies, reduced their demands to such an extent that a contractor was enabled to employ them at rates lower than the cost of hauling by wagon trains belonging to the road. A contract favorable to the road was made and resulted in the saving of a very large percentage of the previous cost of transportation. The road trains were still used when they could be employed advantageously, although the local work of distributing supplies from the main depots, or hauling gravel and crushed rock for road metalling and sand and cement for masonry work, usually kept the trains fully occupied.

Great pains were taken to protect the interests of the government in the purchase of cattle for draft and beef purposes. Prior to July, 1903, a uniform price of \$180 and \$150, Mexican currency, had been paid for draft and beef cattle, respectively. A contract was immediately made for the delivery of Shanghai cattle at ₱135, Philippine currency, for draft purposes and at prices ranging from ₱115 to ₱135 for beef cattle, dependent upon their weight, a minimum being fixed for animals required for either purpose. Shanghai cattle were chosen, as experience had demonstrated their superior size, hardihood, and immunity from disease. They were carefully weighed and inspected to ascertain whether they fulfilled all the requirements of the contract, by a board of inspectors at Dagupan.

During the maintenance of a military force at that place the board was composed of cavalry officers and the post veterinarian, these gentlemen serving voluntarily at the request of the officer in charge. Five days of quarantine were there required, and at delivery on the road they were subjected to a final inspection before acceptance. When cattle were worn out or when their hoofs became too tender for them to be useful as draft animals, they were pastured, then stall-fed for a couple of weeks, and slaughtered for beef. Cattle purchased for beef were likewise, when suitable, transferred to the transportation department. This arrangement was satisfactory and economical. In the last year, transportation facilities being improved, frozen Australian beef was issued.

The hoofs of Chinese cattle are very thin and wear through quickly when used on hard macadam or gravel roads. It was even difficult to shoe them, on account of the danger of pricking and laming them. Straw and hemp shoes, made by Japanese laborers, were tried. They wore out so quickly that their use was abandoned, and at last all draft cattle were iron or steel shod.

Medical department.—The dangerous character of the work, the difficulties of communication, and the remoteness of all of the camps from medical attendance in case of sickness or accident, made it indispensably necessary to have surgeons in the employ of the road. Hospitals were built at Twin Peaks, Camp 4, Camp Dowd, and Camp Colgan, each under the charge of a surgeon. These hospitals were so located that communication for some distance along the line near them was comparatively easy, and while the camps adjacent to them had no surgeons, each was provided with an experienced hospital steward or attendant who was competent to administer first aid to the wounded and to treat light cases of sickness. Serious cases were transported to the nearest hospital.

The surgeons employed on the Benguet road were: Dr. J. W. Madara, August 1, 1903, to March 13, 1905; Dr. J. V. Tormey, January 3, 1904, to February 28, 1905; Dr. T. H. Lander, January 22, 1904, to May 31, 1905; Dr. T. G. Howe, March 4, 1904, to April 15, 1905.

The hospitals were provided with quarters for the surgeons and attendants, a dispensary, an operating room, bathroom, wardroom, and kitchen.

Gold-medal cots and comfortable bedding were furnished by the road for the use of patients, who were subsisted and treated gratis when their illness was contracted in the line of duty. For the ordinary ration of the road were substituted articles of food suitable for special diet for the sick, issued from the road commissary on the requisitions of the surgeons and the approval of the officer in charge.

The chief surgeon was required to make a monthly inspection and report of all hospitals and camps of the road and a weekly report of all sick and injured.

By far the greatest number of cases treated were the results of accidents. Malaria was quite common, though few new cases were developed on the road. Dysentery was the most fatal disease.

Since June, 1903, four fatal accidents have occurred, due to explosions. In that year one American and one native were killed and one native injured at Cliff 1. This explosion was caused by the American throwing a lighted cigarette into a loaded seam, and his death was due to his own reckless carelessness.

In 1904 an American was killed at Hanns Cliff. The charge held fire and, against the warnings of the foreman, he went toward it and was crushed under falling rock. Later in 1904 four Americans and one Japanese were killed near Camp 4 by the explosion of a charge which had missed fire two hours previously. The men were working at and near the charge when the explosion occurred. Its cause could not be ascertained.

A number of men were killed by falling over the cliffs. A considerable number were drowned, the most serious accident of this character resulting from the crowding of Japanese on a light footbridge, which broke under their weight, precipitating them into the swollen river.

Many minor accidents occurred, and the surgeons were kept busy treating fractures, cuts, burns, and bruises.

All cases of serious accident were required to be reported at once to the officer in charge, and when death resulted a committee appointed by him, and of which he was a member, made a thorough investigation of the causes and circumstances of such death, taking the sworn testimony of witnesses in relation thereto. This testimony was placed in the form of affidavits, which, with the report of the committee, were filed in the headquarters office.

All persons who were killed or died on the road were accorded decent burial, and identification of their graves assured by burying a bottle with name, etc., with the body. Record was kept of all deaths.

Great care was taken in regard to the selection of camps. They were usually placed on high, well-drained ground, and accessible to an abundance of clear, running water. In some camps the water was brought from springs in pipes, either of galvanized iron or bamboo; in one camp a small, clear stream was diverted from its course and carried through the camp in a shallow acequia. Sinks were flushed out and all refuse carried at once into the main river.

It was essential that the utmost care be taken in the matter of sanitation. Cholera was prevalent in neighboring provinces and the conditions were favorable for the spread of that and other enteric diseases. Dysentery was common; cholera, in fact, broke out twice on the road and smallpox once, but were promptly stamped out by energetic and even drastic measures. On the second appearance of cholera it was suppressed so quietly and quickly that the road force was ignorant of its presence, although the cases were of remarkable virulence. The clothing, bedding, and houses of smallpox and cholera patients were burned and the patients effectively quarantined.

Cleanliness was enforced in all camps. The buildings occupied by laborers were white-washed throughout their interiors. Sanitary rules were published and translated into Spanish, Tagalog, Ilocano, Pangasinan, Chinese, and Japanese. These rules were posted in all camps. A copy is appended as Exhibit D.

Constant care was taken to insure good cooks, in order to avoid sickness from improperly prepared food.

In every camp was a special police detail to keep it clean. Water was first boiled and in cholera times acidulated with sulphuric acid. The rules were enforced as well as possible, though natives persisted in drinking water from running streams. Sickness was relatively very much less prevalent among the white laborers than among natives or other Orientals.

A sanitary inspector was appointed to visit all camps to report violations of rules. As a result of these measures the proportion of sick diminished greatly, and an excellent degree of general health prevailed on the road.

Police department.—In regard to the preservation of peace and order on the road, the officer in charge, in the absence of proper legal machinery, appealing to the primal law of necessity, took matters in his own hands and dealt out justice in the small cases which arose from time to time. Later a justice of the peace was duly appointed, but it must be said that his duties were chiefly confined to the taking of the affidavits required for property returns.

At the request of the officer in charge, the chief watchman of the road was appointed a deputy sheriff of the province of Benguet. The watchmen employed to guard the disbursing office, property, and commissary warehouses, magazines, etc., were given police powers, and were charged with the duty of enforcing the rules and regulations of the road relating to the sale of liquors and the preservation of order, and were also "authorized and directed to quell all disturbances, to suppress disorders of any character, and to arrest all persons engaged in breaking the peace or committing crime on the said road, using such force as may be necessary to affect such arrest."

They were instructed further: "All persons so arrested will be turned over as soon as practicable to the nearest constabulary guard, and the facts of the case reported to the officer in charge."

It was but seldom that the watchmen found it necessary to enforce these provisions of the road regulations.

Camp foremen were given police powers of the same nature with reference to their respective camps, and were held responsible that good order prevailed in them.

Soon after taking control of affairs on the Benguet road, the officer in charge was confronted by the saloon question. There was one saloon, with branches, already in existence. The request was made that no other establishment should be given license to sell liquors. The argument was advanced that the business, if under one responsible person, could be controlled better. The request had already been made of Provincial Governor Pack, who declined to foster a monopoly. The officer in charge also disapproved of the plan for the same and other reasons, and further, he refused to "secure debts by order," the ground being taken that the disbursing officer could not be made an agent for the collection of private debts. An agreement was had with the provincial governor that no person objectionable to the officer in charge should be issued a license, and the license, when issued, was "subject to the rules and regulations of the Benguet road." By this means the number of saloons was limited and a more responsible element insured for conducting the business. They were generally kept out of the camps proper, but under strict police control and surveillance. Regulations were published in all camps and a copy given to every proprietor. The following, in substance, were the rules enforced:

All saloons, bars, and canteens were closed at 9 o'clock, p. m., on week days, except Saturdays, when the closing hour was 11 p. m.

No beer, wine, or liquor of any kind was to be sold to any person under the influence of any kind of intoxicant, nor to any particular individual who might be designated from headquarters.

Any saloon, bar, or canteen found open or selling intoxicants after 7 o'clock, p. m., on Sundays was closed.

Any place where disorders habitually or frequently arose was closed.

All gambling games which required special fixtures and which normally yield a certain percentage to the so-called bank were prohibited. Persons maintaining such games were to be prosecuted under the gambling laws of the province.

For violations of any of the rules the places were closed.

These were no dead-letter laws, but were strictly enforced. When several places had actually been closed there was general observance of the rules.

With a motley crowd of thousands of laborers, representing all the nations of earth, there prevailed a normal state of good order that was as surprising as gratifying. The men were worked hard during ten hours of the day. They were well fed and at night they cared for little but their bunks. Sunday and holiday work was prohibited, except in cases of emergency, when the authority of the officer in charge or the certificate of the chief engineer was required before payment was made for such work. The holidays observed were New Year's Day, Washington's Birthday, Fourth of July, Thanksgiving, and Christmas.

A few sporadic cases of crime occurred during the two years from July, 1903, to the conclusion of the work. The principal cases were as follows: On Christmas, 1903, one Spaniard stabbed another. In 1904 a trunk was stolen in one of the camps and one negro killed another, and a stabbing affray occurred in 1905. Some minor offenses were committed by negroes, who were the most lawless and troublesome class on the road. Some of them, however, it must be said, in justice, were among the best and most faithful workers employed. Others were lazy and worthless. When discharged they lay around the barrios, keeping constantly drunk on the cheap vino of the country, and living on the proceeds of the small tiendas kept by their Filipino wives. So far as possible, this class, whether white or black, was persecuted in an earnest effort to drive them off the road. Some were tried for vagrancy and were deported "to encourage the others."

An investigation of the conditions of the road was made in December, 1904, on account of the failure of evidence to justify trial in the case of the stolen trunk above referred to and a case of assault with intent to kill. The latter case occurred beyond the limits of the road and was an attack by two Filipinos on a discharged workman en route to Dagupan. The perpetrators were captured and held for trial by employees of the road. The inspector, Mr. P. M. Moir, fiscal, found conditions far better than he expected. In his report he states:

"Camp foremen are clothed with certain police powers, and they maintain order in their respective camps, and Deputy Sheriff Kilgore, a fine police officer who is justly feared by evil doers, goes from camp to camp as often as he can. * * * Considering the class of workers there—Japanese, Chinese, Filipinos, Igorrotes, and Americans, including negroes—it is surprising to me that there is so little crime, and I think credit is due the corps of workers for keeping the peace so well on the line."

LABOR.

The question of labor in the Philippines is one of general interest, and the following pages of experience with laborers on the Benguet road are submitted, in the hope that they may contribute something of value to the discussion.

In the early days of the road work great difficulty was experienced in securing laborers. It would seem that at first natives were impressed from neighboring towns, but the military authorities almost immediately put a stop to this. Agents were then sent by the road throughout neighboring provinces to secure laborers. On April 1, 1901, Captain Mead reported: "The difficulty in securing native laborers continues to be a most serious difficulty." On the same date he wired: "Not one native working to-day, and there is no way of making the fools work during holy week."

The experiment was tried of getting Tagalog laborers from Manila and other places, and more than 200 were sent out. Captain Mead reported this experiment to be an absolute failure, as they would not work, striking twice, and finally leaving the works entirely. The worst feature was that the Ilocanos and Pangasinans quit working "on account of their natural dislike to the Tagalogs." The latter were a disturbing element, making absurd demands on the road authorities and forcibly driving local laborers from the camps.

Mr. Holmes reported in June, 1902: "After a year's acquaintance with this (Filipino) labor I can, without hesitation, say that unless under the direct charge of a white foreman they will not work, and under the most favorable circumstances such work as they do perform is not equal to more than one-fifth the amount a good white laborer would perform in the same period. The native is lazy, shiftless, sly, treacherous, and ignorant; he works not for the money he is paid, but because his presidente has ordered him out to a week's work; his chief occupation during the day is scheming how to avoid work, and his wiles to achieve this result are numerous. The labor question has been one of my chief studies, but I have failed to discover a method by which the Filipino can be made to work, except under the eye of a taskmaster." Again, in July, 1902, the same officer reported: "The native makes but a poor showing as a laborer. * * * Everything but personal violence has been tried to procure a higher quality of labor from him, but notwithstanding the many schemes put forth, but little actual result has been obtained. No foreman is allowed to strike a workman under any provocation, as a fear of violence will not cause them to work faster, but leads them to desert at the first opportunity, when they not only do not return themselves, but induce others to remain away by stories of harsh treatment."

"It was eventually discovered that ridicule had more effect upon the natives than aught else, and so by working upon this thread of his character I was frequently able to obtain some results. If a man would be found loafing, he would be placed upon some lone piece of rock or other prominent point and made to stand there holding in his hands a small piece of rock. This would tend to call upon him a sheaf of witticisms and remarks from his collaborators, who would work with an increased vim for some time. This and similar schemes have been quite successful in keeping the men keyed up, yet in spite of all that can be done they will not do an honest, full day's work, such as their strength is capable of.

"It is necessary to have a white foreman over just so many as he can watch at one time, dependent upon the class and location of the work. The instant the eye of the white man is off them that moment they quit work or idle away the time in idle pretense. In character they are sly and deceitful, are totally devoid of energy, and always lie in preference to telling the truth, even if there is nothing to gain. I refer now to the lowlander, the Pangasinan, and Ilocano. The Igorrote from Benguet is a vastly superior animal. We found the Igorrote invariably trustworthy and in general a willing worker. He can be trusted off by himself without the necessity of a white foreman to watch him, and when he works he does not dabble, waiting only for the hours to pass, but digs in with a vim and makes progress. * * *

"I consider one Igorrote worth three Ilocanos or Pangasinans in wage value, and his everlasting cheerfulness and good nature and utter honesty tends much to the furthering and progress of the work by creating easy and harmonious relations between him and the foreman."

In January, 1903, report is again made that "from two to four men have been kept on the road daily in the vain attempt to secure enough labor to allow us to make at least a small progress. Personal visits to the presidents of the towns have been made by myself, my chief clerk, and superintendents. Letters and telegrams have been sent to the gov, ernor of Pangasinan, requesting relief from the foregoing conditions. Assistance has been requested from the executive secretary, and proclamations have been posted in other provinces than Pangasinan, directing men to come here to work, but notwithstanding all this the work at this date is still in the same state of stagnation. It is the custom of the presidents and headmen of the towns to make us many fair promises and fair assurances, which are never fulfilled. The country is full of unemployed men, and pressure should be brought to bear requiring them to work. * * * For it is undeniable that neither the Igorrote nor the Filipino, as far as my observation has extended, will work of their own free will, and, unless coerced to some extent by the presidents of the towns, will never come forward and volunteer their services. * * *

"In an entire year there are about four months during which work of any moment can be accomplished—January, February, March, and May. In April comes Easter, with its abundant 'fiestas,' when no Filipino sullies himself with work for at least two weeks, and most of them extend their holidays to three weeks. * * *

"There is a remedy for this condition of affairs, but it lies solely with the governor to apply it. Many plans have been tried by me to induce the native to volunteer his services, and each has met with the same inglorious failure. My resources in this respect are at an end, and unless active cooperation rather than a nonantagonistic passivity can be demanded from the governors, the work may drift along for another month or two with no laborers, and consequently with no progress. * * * My regular courier has just returned from an extensive trip as far as Ilocos Sur and covering Benguet, Union, and Lepanto. He received the promise of many men—found hundreds idle, but brought none with him."

The subsequent reports of this officer repeat the same story of the scarcity of labor. In April, 1903, he states: "The deflection of labor has become so great that in an effort to accomplish something and make some small progress I have lately begun to hire American labor at \$2 gold per day, and have on the works at this time about forty Americans—whites and negroes—to test the value of their services as compared to the natives."

In May, 1903, an increase in the amount of work performed over that of previous months is stated to be "due to the Americans employed, who are averaging about five times the work of a similar amount of Filipinos. Three Americans to a drill are making from 7 to 15 feet per day against 10 to 30 inches by three Filipinos to one drill."

In his report for the fiscal year 1903, Mr. Holmes goes into an extended discussion of the absolute and relative value of the Filipino as a laborer. A copy is appended hereto as Exhibit E.

In June, 1903, there was a total of 173 employees on the road, including natives and Americans, white and black.

Mr. Pascual H. Poblete, a mestizo native of Manila, having published in his newspaper in July, 1903, that he could furnish practically unlimited numbers of laborers, was called upon by the officer in charge to furnish 1,000 or more for the Benguet road. His agents speedily secured that number and they were started for Twin Peaks. Only 300 ever reached that point, and of these 250 returned at once to Manila on learning that their pay was not to be from \$2 to \$4 gold, per diem, with rations and quarters. It seems that they had been

grossly deceived by the labor agents, who in turn had misunderstood or been deceived by Poblete, and, counseled by the agents, the laborers returned at once to Manila. One band under Alfonso Acosta, numbering about fifty men, remained and worked well until the road was built. Many others subsequently joined them. The wage offered them, 25 cents gold per diem, with rations and quarters, which they might be required to build themselves, was liberal—more, probably, than they had ever before received. The cause of their discontent was apparently that they had been deceived, and this a Filipino dislikes beyond measure. Subsequently thousands of them worked contentedly for the same wage.

Immediately upon the return of Poblete's men to Manila, organized effort seems to have been made to prevent other laborers from going to Benguet. The native newspapers spread throughout the islands tales of the sufferings of the Filipino laborers on the road, of indignities and abuses heaped upon them, of starvation and death. These reports were investigated by the Government and found to be groundless. (See report of the civil governor for the period ending December 23, 1903. Exhibit N.) At the same time Manila was placarded with notices to the effect that the works in Benguet which had been projected should not be carried to conclusion. Our Chief ordered that none should work there because the officer in charge would not pay better wages.

This was answered by contracting for several hundred Chinamen, some of whom were immediately sent to Benguet and put at work upon the road. At the same time agents were sent to Albay and Batangas and several hundred natives secured, although many were frightened off by the newspaper reports just referred to after having assembled ready to board the steamer for Dagupan. The Batangas men, it may be added, remained on the work until its finish, and some are retained at present as a part of the maintenance gang.

The officer in charge had previously had dealings with the numerous Ilocano emigrants to Pangasinan and Nueva Ecija. He had made them his allies in the days of insurrection, and now asked them to aid him in the works of peace. Two thousand of these men came to the road, and by October, 1903, the working force numbered 2,800 laborers, most of whom were Filipinos. From that date no scarcity of labor ever existed; the force would diminish at Christmas, Easter, and at harvesting time, but men leaving at those times often brought back others with them. Finally it became necessary to turn away native applicants for work and to publish in the Manila newspapers a notice that no more laborers were wanted on the road.

From the foregoing it appears that prior to July, 1903, it was difficult, almost impossible, to secure native laborers and that those obtained were of little value as workmen, and that after that date and in spite of the active hostility of Filipino leaders and newspapers there was little or no difficulty in obtaining native labor, and the greater part of the work on the road was performed by Filipinos. A comparison of methods in handling this class of labor seems not only invited but required, and the following remarks are ventured as an explanation of the diametrically opposite results obtained before and after July, 1903.

From the reports quoted above it appears that prior to that date laborers were provided by impressment, direct and indirect; the former was speedily stopped, but the latter was continually resorted to. Governors of provinces and presidentes were requested to order men to work. When these requests were complied with there seems to have been a system by which a certain number of men were sent to work for a certain specified time, as one week. It is reported that a man would come from a distant town, arrive on the road in time to work Saturday, collect his pay, and leave the next day. Under such a system the laborer could not learn to use tools new to him or become accustomed to the work. When sent to work for a week, by order, the man naturally worked as if he were serving a sentence.

The laborer, the tao himself, seems to have been little considered or consulted, and it was assumed as "undeniable" that he would not work "unless coerced to some extent by the presidentes." There is no record of any special inducements offered to get him to come or to stay after he had arrived. Beyond question he felt that he was despised and treated with contempt and ridicule. "Everything but personal violence" was tried to produce a higher quality of work from him; everywhere an idea of force—"pressure," "coercion"—appears to have been the basis of the treatment of natives. No foreman was allowed to strike a native under any provocation, but if the foreman did not, others did.

The tao is human. He is densely ignorant and primitive, but he is not cattle. He keenly resents harsh treatment; he resents harsh looks; he does not like to work for a man who wears an habitually stern expression of countenance. If he thinks himself insulted or subjected to indignity, he can not openly retaliate, but quietly takes himself off and quits work, perhaps trying to even the score by some act of malicious mischief. But no person on earth responds more quickly to kindness than the Filipino; a pleasant manner, a considerate bearing, just treatment, and a courteous return of his salutation go a long way with him. Also and especially, he likes to feed well. He is fond of music, amusements, and gayety, fond of his own home and family. His wants are few, simple, and easily supplied. He is not naturally fond of work, but is willing to work for good food

and pleasant surroundings, or from necessity. Money is not a great object to him, but still a little is necessary to enable him to pay taxes, to buy cigarettes and clothing, and to bet on the weekly cockfights. He was reluctant to go into a remote, wild country, where dangers lurked on every side, for the mere purpose of working at the order of his presidente.

In some manner to provide for these Filipino necessities a band was organized on the road, men were permitted to bring their wives with them, and a ration was provided of greater variety and abundance than they could obtain ordinarily at home. The mere fact that meat was issued regularly to them undoubtedly brought many laborers to the road.

Dances were held on Saturday nights, the band going from camp to camp, and often playing on the road while men were working. The band was brought up unobserved behind a body of Filipino workmen, and without warning it started a lively tune. As if moved by a common impulse the laborers emitted wild yells and furiously charged the bank of earth with pick and shovel, fairly making the dirt fly in time to the music.

Payments were made monthly, and each man personally received all the money he had earned. On a sufficiently long trial the work was found not to be too arduous; the native was well treated. Finding conditions endurable, and in some respects even desirable, many native foremen and laborers sent for their families and built houses near the camps; small shops were opened to supply native needs and luxuries, and soon regular villages arose along the road at Twin Peaks, camps 3 and 4, and above, in all numbering perhaps 3,000 souls.

No special amusements were provided for the natives beyond the band and dances above mentioned. Sundays and national holidays only were observed. The diminution of the force during the Christmas and Easter holidays was temporary only and a large percentage, possibly a majority, remained steadily at work at these times. Cockfighting and gambling were discouraged and the former was practically eliminated before the close of the work. A cockpit was started by native enterprise at Twin Peaks, but it had a short life. A postal money-order office was established and Filipino laborers induced in that way to send money to their families. Many of them did so. Others also took advantage of the office as a savings bank by purchasing money orders payable to themselves at Manila.

The method usually employed to secure laborers was to send native agents to their own towns or to any district in which starvation conditions were reported to exist. Laborers were secured from Albay, Batangas, Panay, Nueva Ecija, Manila, Pampanga, Tarlac, Pangasinan, Unión, and Benguet, with scattering representatives of other provinces. From the neighboring towns a constant stream of laborers was coming and going. It would seem that many came to work with a view of earning a certain fixed sum, after which they returned home to come again later when more money was needed.

Labor agents were selected with care, and most of them were themselves of the laboring class. They were furnished with a statement of the wages, ration, and treatment accorded to natives, translated into the local dialects. Quite often delegations were taken to the road to observe conditions, the character of the work, rations, etc., and on their reports many laborers came to the road. These delegations were always composed of men of the working classes. The tao is not often willing to accept the word of any other class than his own.

After the work was well organized and started, laborers returning to their own towns on pass were the most effective labor agents. Every effort was made to get at and interest the individual laborer; and when accorded fair dealing, fair treatment, and a fair ration he soon became a loyal servant.

The general policy adopted toward native laborers is indicated by the following note, of September 26, 1903, from the officer in charge to a camp foreman:

"I have sent you to Camp 3, and placed you in charge. The camp has had a bad name, for several reasons, and I am in hopes that you will be able to control the diverse elements there and get everybody working harmoniously together for the interests of the road. You will have to adopt different measures with different people, but my firm belief is that with Asiatic peoples harshness and blows are entirely ineffective to produce the maximum amount of work. An old Yankee proverb states that 'one can catch more flies with molasses than with vinegar.' Standing orders of the road are that no native must be struck. The same rule is extended to all classes of laborers. I desire a policy of attraction rather than coercion, and I know that better work will result from such a policy.

"You will exercise the greatest care in the selection of your foremen, and get men who control their own tempers. A man who can not control himself can never hope to control others. As mentioned in my note of to-day, good workers do not necessarily make good foremen.

"Another thing. You must listen to all complaints patiently, and, if well founded, apply a remedy at once. Look after your foremen at all times, and note their conduct when they start their parties in the morning and during their working hours.

"Your command will soon number 1,000 men, and I trust to your activity, patience, and tact to develop in that force the greatest possible degree of working energy."

It is believed that much trouble has arisen with Filipino laborers through misunderstanding. All instructions, rules, and regulations which concerned natives were translated into their own dialects or carefully explained to them by competent interpreters. They were then willing, obedient, and orderly, and always submissive to authority.

The Filipino makes a tolerably good workman when trained and properly supervised. The class of work required on the Benguet road was new to him and he went at it awkwardly enough at the start. Each laborer was patiently shown by a foreman how to use his tools and how to accomplish most with the least effort. Most of them attained a fair degree of efficiency and soon became good workmen.

As a special incentive to constancy in labor, it was ordered that when the time books showed that a Filipino had worked one entire month without losing a day by "not sick and not working," he should receive an increase in his daily wage. This was independent of increase by reason of personal merit, which was made when a man's work warranted it. If the man in similar manner worked another month he received another raise, and if he held out for three months, still another. In any case the men were worth the increased wage by reason of greater efficiency acquired by practice and by superior physical strength due to constant training and a substantial ration. A considerable number received the first increase and a fair proportion the maximum.

More than the value in a money sense, the men took pride in the fact of receiving more than other workmen. Another rule was that men leaving the work forfeited their positions and were received back at the lowest rate of pay of their class.

An inclination to "lay off" for a day or two was common, especially to the Filipino and to the American negro. Among the latter were some excellent workmen, but many seemed desirous only of working enough to keep their names on the ration list. To meet this condition, it was ordered that all employees who failed to work, not being excused by the medical officer on account of sickness, should not only receive no pay for the time so lost, but would be charged for their board, and it was further provided that if any man's charge for board exceeded the amount due him for wages, the difference should be collected from the camp foreman. It is not recalled that any such collections were made.

The Filipino, in the earlier days, had a great distaste for working anywhere but on a roadway already blocked out. They were with difficulty persuaded to go beyond the limits of road already constructed; they were fearful of precipices and cliff work. Beyond Camp 3 the canyon and river had to be crossed to reach the upper camps, the descent being made by aid of a rope. Several parties of native laborers on reaching the top of the cliff looked over the edge and turned back, refusing to go farther. The same condition prevailed at Camp 4, except that the descent and ascent were by ladders. Another party of laborers was changing camp. The mestizo foreman succeeded in getting his men to the river bottom, but they halted at the foot of the 50-foot ladder on the other side. His voluble threats, appeals, and eloquence were wasted. It was too much to ask them to risk their lives in such a climb. Disgusted, the foreman turned to his wife and told her to mount the ladder. She did so and the whole party, following her, moved on its way.

Before the close of the work, however, natives became accustomed to the wildness of the country and were freely employed on cliffs and other dangerous classes of work.

Working parties of different tribes were sometimes pitted against each other and a spirit of emulation was fostered which increased the output of labor. There was considerable rivalry between the Tagalogs and Ilocanos as to which should be considered the better workmen.

It may be said that after becoming inured to the work, the Filipino, considering his wage and ration, was the most economical laborer employed on the road for ordinary work. Skilled supervision is essential, however. The opinion is ventured that the Philippine Islands may be developed by native labor alone under suitable conditions. Time, tact, patient instruction, and fair dealing will accomplish much; the personal equation enters very largely into the problem.

The government had received the reports quoted above and the labor situation was considered desperate. It was decided to try the experiment of employing convict labor on the Benguet road, and in August, 1903, 200 were sent to Twin Peaks from Bilibid Prison, Manila. They proved costly and accomplished practically nothing in the way of road building. They were well housed at Camp 3 in quarters probably better than those occupied by any other laborers on the road. But the work was dangerous, and a shackled prisoner could not be placed upon a precipitous cliff without endangering his life. There was no other kind of work. They were homesick for Bilibid, disease began to make ravages among them; some died, others escaped, and the remainder were demoralized and useless as laborers. They were returned to Manila in November, 1903.

The Benguet road was a harbor of refuge for all of the unemployed of the Philippines. There were representatives of 46 nations at work on the road. There were North American Indians, Hawaiians, Mexicans, Peruvians, Chilians, Hindus, Chinese, Japanese, Russians, Germans, Irish, English, French, Swedes, etc., all working harmoniously together.

All workmen of American, European, or African origin were classed under the general head of Americans.

All laborers, excepting orientals, on entering the service of the road were required to give their names, nationalities, name and address of nearest relative or friend, and record was kept of the history, character, conduct, promotions, etc., of each employee while on the road. The data required by law in case of death was thus available and answer made to the frequent inquiries by civil and military authorities of the islands concerning individuals of whom information was wanted.

In the case of orientals the names, residences, and road history only were recorded.

The hours of labor were ten hours a day. When proper sanitary measures were adopted and enforced, the work in sun and rain seemed to have but little bad effect on the health of the force which was generally good. Men were encouraged to save their pay and care for their health. As a rule all classes worked faithfully and well.

The two or three strikes which occurred on the road were readily adjusted by discharging and blacklisting the strikers, excepting in one case where Chinese laborers struck on account of ill treatment by a constabulary guard. Their grievance was just and they returned to work on assurance of better treatment. The other strikes were of Japanese and negroes.

The great variety of workmen employed on the road gave opportunity for a comparison of the relative working value of the several races. The American or European, by reason of his strength, and especially by the intelligent direction of his strength, is superior to all other workmen, and could accomplish more in a given time than any other. Americans were, on their merits, selected generally as foremen of the various grades.

Spaniards were among the very best laborers employed, steady, constant, industrious, and hard working always.

The Japanese were superior workmen. They were intelligent and worked well when watched. They were fearless and active on cliff work. They furnished many carpenters and stone masons; most of them could be called upon to lay walls or to do stone work of almost any kind.

The Chinese did not turn out well and the 500 which reported were soon reduced to about 200. The majority were confirmed opium smokers and of little value as laborers, and were discharged. The selected few that remained were good workers and more adaptable than Filipinos.

There was always great difficulty experienced in procuring skilled laborers, and in many cases men were taught and trained during the progress of the work. This necessitated unusual care in superintendence, but at the finish there was a body of men on the road which could hardly be excelled in this class of work.

The rates of pay for all employees are set forth in Exhibit F, appended hereto.

To create an incentive to work there were established two rates of pay in all classes of labor. The effect was to make men of the lower rate work for an increase and those of the higher rate to maintain their status.

The following circular of November 13, 1903, sets forth the rules governing promotion and reduction:

"All foremen will note carefully the work of each individual man of their gangs or parties. If he be an active, energetic, steady, hard worker, he will be recommended for increase of pay. On the contrary, if he does not meet these requirements, he will be recommended for a decrease in pay. If his work be not satisfactory he will be recommended for discharge.

"Foremen will use their best judgment in selecting men either for an increase or decrease of pay, looking always to the best interests of the road.

"All recommendations must be sent through the camp and section foremen in order to receive consideration at the main office.

"Camp and section foremen will indorse on the recommendations their opinion in each individual case.

"Hereafter recommendations for increase in pay to extend back to any given date will not be considered. If approved, the increased rate of pay will go into effect on the date of approval."

The selection of camp foremen was a matter of careful consideration. They were required not only to be well versed in all the different classes of work required, but also to be men of sufficient force of character, mentally and physically, to govern and control the heterogeneous elements which composed their commands. They were promoted by selection and after extended observation; those in charge of camps at the close of the work were as good assistants in this class of work as any man could desire. They were mostly miners who had served in the Spanish war and in the insurrection in the Philippines, and who had remained in the islands after receiving their discharges from the military service. They were well adapted to understand and carry into effect the semimilitary system of administration inaugurated by the officer in charge in 1903. His thanks are due to them for their able and enthusiastic support and for their unfailing energy in pushing the work. The men especially meant in these remarks are First-class Foremen Jos. B. Boyd, Charles Colgan, W. C. Cook, Jack Dowd, C. P. Hann, J. P. McElroy, William Proback, and Frank Reed.

The quarters occupied by laborers and other employees of the road were made of a framework of poles with roofs and sides of grass. The sides were sometimes of bamboo wattling as were generally the floors. In the quarters bunks were arranged in tiers and were usually of poles covered with matting. The buildings at a camp were usually the foreman's quarters and office, kitchen and mess house, American quarters, native or oriental quarters, storehouse, powder magazine and hospital. All were built at a comparatively low cost, from material obtained in the vicinity. Tents were used for temporary dry-season camps, but in the wet season dry quarters were a necessity, and the grass buildings answered this purpose very well.

The greatest objection to this class of buildings is the danger from fire. The utmost care was exercised to prevent fires, several of which were extinguished by watchmen before serious damage was done. In April, 1905, the Chinese quarters at Camp Colgan were burned. The most serious loss, however, was on the 11th of March, 1905, when a fire broke out in the native quarters at Camp 4. A high wind which prevailed at the time carried sparks a distance of 800 feet to the roof of the engineer office. It was at the close of the dry season, everything was as dry as tinder, the grass took fire, and in an instant the building was in flames, which communicated with the office of the officer in charge. Within a few moments both buildings were burned to the ground. Although no documents relating to the financial affairs or to the property accountability of the road, were stored in either of these buildings, the loss was great as regards the maps, plans, estimates, note books, drawings, etc., which had been prepared by the engineer department.

A resurvey of the road was made at once in order to show the general location, but it was impracticable in the available time to prepare another profile, or to show tangents, curves, etc., in the same complete manner as on the maps destroyed.

Such plans as are submitted were also prepared after the fire. This statement is made to explain the meager showing of plans and maps accompanying this report.

TRIANGULATION.

In order to fix definitely the location of the various lines surveyed relative to each other, and to establish the geodetic positions of all points embraced in the work, a triangulation was made connecting Baguio with the United States Coast and Geodetic Survey work at San Fernando, Unión, and at Dagupan. Coordinates resulting from the two surveys were, for the class of work, identical, and were as follows for Dagupan:

Survey.	Latitude.	Longitude.
United States Coast and Geodetic Survey.....	° 16 02 41.44	° 120 19 49.03
Benguet road survey.....	16 02 41.95	120 19 48.84
Difference.....	0.51	0.19

The base of this triangulation was the line Insurrect-Ball, of the United States Coast and Geodetic Survey, its position, length, and azimuth having been determined by that survey, and assumed to be without error.

The angles were measured by Assistant Engineer C. G. Benson with a Brandis repeating transit, reading to half-minutes of arc.

Reciprocal vertical angles were measured between all stations, but refraction seemed to be so variable that much dependence is not placed on elevations computed from them, especially if measured from the lowlands to mountain tops and the reverse. Values of the coefficient of refraction deduced from these observations were so varied that, in order to obtain its value, a series of simultaneous reciprocal observations was planned between Insurrect and Limestone and other points which were connected by a line of levels. A favorable opportunity did not present itself for this work and it was not done.

A very careful line of spirit levels was surveyed between the Coast and Geodetic Survey bench mark at San Fernando and Baguio. It is an unchecked single line, run in one direction only, but Mr. H. M. Mickle, who did the work, was a careful and an experienced man, and it is believed there is no material error in his results. The bench marks located with their elevation are given in Exhibit G, appended hereto.

This section of country had hitherto been unmapped, and the data obtained by the work above outlined will afford a trustworthy basis for the work of other departments of the Government.

The results obtained by the triangulation are appended hereto as Exhibit H and Exhibit I.

A local triangulation was made in the vicinity of Baguio, the results of which are hereto appended.

WATER POWER.

To determine the availability of the Bued River as a source of power for an electric railway weir measurements were made during the months of April and May, 1904, the period of low water in the river. The minimum flow was about 47 cubic feet per second and for a considerable period remained close to that amount. During the rainy season the floods are of terrific force and volume; huge boulders, weighing several tons, are hurried along and are broken and ground to pebbles by the tremendous power of the stream which drives them against the bed rock of the river. The utilization of the Bued River to furnish power for an electric road was deemed impracticable, mainly on account of the insufficient flow of water during three months of the year.

The Agno River flows from the extreme northern part of Benguet Province and issues into the lowlands through a canyon about 16 miles east of Caoringan. It is a large stream and was examined by Chief Engineer Perkins and Assistant Engineer C. G. Benson in June and July, 1904; they reported that the Agno River would afford abundant and available water power, but the report and accompanying maps were destroyed by fire in March, 1905. Their opinions were confirmed by Mr. H. F. Labelle, civil engineer, who subsequently made an investigation of that river to determine its availability for furnishing power and light for Baguio.

APPROPRIATIONS.

The total amount of the appropriations for the Benguet road from September 12, 1900, to March 23, 1905, was \$2,051,562.80, in United States currency, an account of which has been duly made to the Auditor of the Philippine Islands.

Of this amount there were disbursed under the direction of the officer in charge approximately \$1,492,942.06, as follows:

For materials, supplies, etc.....	\$219, 975. 78
For commissaries	209, 226. 23
For transportation.....	82, 639. 31
For salaries and wages.....	981, 100. 74
Total.....	1, 492, 942. 06

This includes also the payment of all indebtedness existing prior to July, 1903, and the cost of the construction, repair, and maintenance of the road below Twin Peaks.

The actual cost of construction of the road from a point 1 mile below Twin Peaks to Baguio was about \$75,000 per mile, which compares very favorably with work of a similar character in the United States.

PROVINCIAL RELATIONS.

It is pleasant to refer to the cordial relations existing between provincial and road authorities. Gov. William F. Pack was always ready to lend whatever aid he could and took great interest in the progress of the work. While his jurisdiction extended over all the country occupied by the working force, he practically left its administration to the officer in charge, a course which avoided friction and was in the interest of the enterprise, as a work of such character must be practically under one head. The governor's uniform courtesy is gratefully appreciated.

CONCLUSION.

It would hardly be just to close this report without mentioning by name the officers whose efficient aid was instrumental in carrying this work to speedy and successful conclusion.

Capt. M. W. Rowell, Eleventh Cavalry, disbursing officer, has been mentioned above. His services and active support were invaluable. Capt. Amos H. Martin, Fourteenth Infantry, did good work in charge of the labor department and records.

To Chief Engineers D. S. Williams, A. H. Perkins, and George H. Hayward, the officer in charge is indebted for most valuable assistance.

Mr. E. F. Ambrose is an excellent commissary and a most competent and trustworthy officer.

Mr. L. F. Heney was a painstaking property officer who looked after and accounted for the large amount of property necessarily scattered over the work for a distance of more than 20 miles.

The chief surgeon, Dr. J. W. Madara, was a competent administrator of his department. His chief assistant and successor, Dr. Thomas H. Landor, was regarded as a man of unusual merit.

Mr. W. A. Milstead and Capt. E. C. Montfort, agents in Manila and Dagupan, respectively, rendered excellent service to the road.



LOOKING UPSTREAM FROM CAMP 3. CAMP 3 $\frac{1}{2}$ SHOWN IN LEFT CENTER.



HANN'S CLIFF, NEAR CAMP 1 $\frac{1}{2}$, SHOWING COMMENCEMENT OF
WORK, FEBRUARY 23, 1904.



HANN'S CLIFF, SHOWING PROGRESS OF WORK, MARCH 16, 1904.



ARCH ERECTED AT POINT OF BEGINNING OF WORK UNDER DIRECTION OF COLONEL KENNON.



OLD ROAD IN BALANGABANG, SEPTEMBER 1, 1904.



TWIN PEAKS, LOOKING NORTH.



THE DEVIL'S SLIDE, ABOVE CAMP 3½.



JAPANESE LABORERS BETWEEN CAMPS 3½ AND SUB. 4.

The excellent photographs accompanying this report were taken by Mr. William P. Arton.

Mr. J. R. Conklin rendered efficient and much appreciated service in the preparation of the report itself.

Respectfully submitted.

L. W. V. KENNON,

Major, Tenth Infantry, Officer in Charge.

MANILA, P. I., August 31, 1905.

EXHIBIT A.

PROPERTY REGULATIONS OF THE BENGUET ROAD.

1. Responsibility devolves upon any person to whom public property is intrusted.
2. In each camp or section there shall be one assistant property clerk, who shall be responsible for all property in his camp or section, and who shall render a monthly return to the property clerk at Twin Peaks of all supplies on hand on the last day of the month, whether expendable or nonexpendable.
3. On the last day of every month the storehouse will be closed and an inventory shall be taken of all property in camp or section, which shall be forwarded to the property clerk at headquarters not later than the third day of the following month.
4. Due care shall be taken by all foremen that supplies be ordered in sufficient quantities before the last day of the month to carry them through that day.
5. Any foreman requiring supplies will request them of the general foreman of his camp; the latter, if the supplies are necessary, will make request of the assistant property clerk of his section, certifying to the necessity of the issue. On such certificates the property will be issued, the foreman signing a receipt for all property issued to him.
6. Requisitions for the supplies of any camp or section must be approved by the chief engineer or by one of his engineer assistants, who will certify to the property clerk the necessity of the issue. On such certificate the property clerk will forward the supplies required, through his assistant at the camp where they may be needed, who will issue them as prescribed above.
7. All orders when filled will be shipped accompanied by a statement of the number and kind of articles shipped, which must be signed by the assistant property clerk who receives it, and shall be by him returned without delay to this office.
8. Any negligence or delinquency on the part of the receiving clerk to comply with this regulation shall be considered sufficient cause for removal.
9. The assistant property clerk at each camp or section shall be held accountable to the property clerk at headquarters for all property on hand and received in his camp or section. The foreman who receipts for these supplies shall be held responsible for all supplies in his charge.
10. The general foreman shall hold each foreman under him responsible for all tools turned over to him, and he shall hold any individual under his control responsible for supplies taken out and not returned at the proper time.
11. It is the duty of every foreman individually to see that all tools in his charge are counted every night and placed under lock and key when not in use; any shortage noticed will be at once investigated and report made to the assistant property clerk of the camp or section.
12. When the party to whom stores have been forwarded believes them to have been miscarried he should promptly inform the property clerk at headquarters.
13. Under no circumstances, except of extreme emergency, shall property be transferred from one camp to another without a written order from the property clerk at headquarters, or at the request of the chief engineer or one of his engineer assistants, in which case receipt will be signed in the usual way. The assistant property clerk at one camp or section may transfer the necessary supplies to another camp or section on memorandum receipt, but the transferring party will be held responsible at headquarters for said supplies until the receiving party shall have taken up and accounted for the property so transferred. When a camp or any large number of men are transferred, and property, on the order of the chief engineer or a first-class foreman, is taken to the camp to which transferred, the person responsible on memorandum receipt for such property will at once notify the property clerk at headquarters and the assistant property clerk, if any, of the camp to which the property is transferred, forwarding the name of the party by whom new memorandum receipt should be signed and requesting a release from such articles thus transferred. When property is thus transferred, the above condition being fulfilled, the officer issuing the order will be held responsible until new memorandum receipts have been signed.

14. All parties in charge of public property will endeavor by timely repairs to keep it in serviceable condition.

15. Public property will not be used for any private purpose whatsoever.

16. Property worn out in the public service may be exchanged at the storehouse upon the recommendations of the chief engineer.

17. Persons responsible for property will be charged for any damage to or loss or destruction of the same, and the cost price deducted from their pay, unless they show to the satisfaction of the accountable party by their affidavit, and those of others, if obtainable, that the damage, loss, or destruction was occasioned by unavoidable causes, and without fault or neglect on their part. All public property lost or destroyed must be accounted for by affidavit.

18. Weekly reports of blasting material shall be rendered by each camp foreman on Saturday of each week, through the office of the division superintendent and chief engineer, and should reach this office not later than the following day.

19. Monthly reports of blasting material shall be rendered by each camp foreman on the last day of each month, which shall be forwarded through the same channels and shall reach this office not later than the third day of the succeeding month. The amount drawn and used by each individual foreman should be shown.

[Orders.]

HEADQUARTERS, BENGUET ROAD.

Twin Peaks, P. I., March 9, 1904.

The following instructions will be observed in forwarding tools and supplies:

1. Assistant property and commissary officers or foremen forwarding supplies will send by the capataz of each train a memorandum showing the name of the foreman to whom the supplies are consigned and a list of the supplies forwarded by the train.

2. Upon arrival of supplies the foreman to whom supplies are consigned will O. K. the memorandum carried by the train capataz or note any shortage and give it to the capataz to be returned by him to the party who forwarded the supplies.

3. All shortages will be reported at once to the officer in charge for investigation and action.

4. All foremen and other employees are prohibited from taking tools or supplies not intended for their camp from any train en route to another camp.

[Orders.]

IMPROVEMENTS IN BENGUET PROVINCE.

TWIN PEAKS, P. I., March 11, 1904.

The officer in charge finds it necessary to caution all foremen with regard to the care of tools and other public property pertaining to the road.

They will see that cement is kept covered until it is required for use.

All tools must be gathered up and secured every evening. Steel must be looked after very carefully, as there is no more to be had in the Orient.

Rope is expensive and must be used only when necessary, and stored in a safe place when not in use.

Public property must be used only for public purposes.

Canvas, either tents or paulins, must be carefully looked after.

[Orders.]

IMPROVEMENTS IN BENGUET PROVINCE.

TWIN PEAKS, P. I., August 3, 1904.

The practice of dropping property as expended where such property is actually on hand on the road is not regarded as in the best interests of the government and will not be permitted in any department of the Benguet road. Property, such as stationery, medicines,

powder, dynamite, etc., which is properly expendable may be dropped by the accountable officer when it has been used; medicines in bottles when opened may be expended when the bottles are necessarily opened.

No supplies or materials of a permanent or ordinarily nondestructible nature will be dropped as expended.

Property worn out in service, or property damaged by other than fair wear and tear in service, will be submitted to a committee. Lost property will be accounted for to a committee by certificates, affidavits, or other evidence submitted by the accountable officer.

An officer's certificate that property has been expended will be considered to mean that it has been actually used up and is no longer in such shape as to be useful to the government or again taken up on the papers of the accountable officer.

If materials are employed in the manufacture of other articles, such articles will be taken up and accounted for on the returns of the accountable officer.

Stationery will be issued sparingly and in no greater quantities than may be strictly necessary for the road service.

The strictest economy will govern all expenditures, and at least as much care given to government property as to one's own personal belongings.

Property lost, damaged, or destroyed through carelessness or neglect will be paid for by the employee responsible for such loss, damage, or destruction.

[Circular. Reference to paragraph 13, property regulations.]

PROPERTY DEPARTMENT, BENGUET ROAD.

TWIN PEAKS, BENGUET, P. I., January 29, 1904.

To all foremen and persons on the Benguet road who may be responsible for public civil property:

First. Any foreman or person authorized by the officer in charge to draw property (whether expendable or nonexpendable) from warehouses at the different camps and stations shall, when drawing such property, receive a local invoice and memorandum receipt from the assistant property officer making such issue. The invoice slip shall be signed by the aforesaid officer and retained by the person receiving the property, who in turn shall sign the memorandum receipts and return same, with the least practicable delay, to the issuing officer.

Second. In cases where one foreman relieves another, and takes over the property for which the foreman being relieved was responsible, the old foreman will produce his original invoice slips, which will be checked and verified by the new foreman, who will, when such check has been made, receipt across the face of the invoice slip in this manner, "Received this property O. K.," or "Received this property as per notations," whichever the case may be. The old foreman will then take the invoice slip to the assistant property officer who made the original issue, who will, if the receipt is O. K., give the old foreman a clearance (which will enable him to receive wages due if he is leaving the road). In cases where property is turned over "short," the invoice slip will be forwarded to the chief property officer, who will enter the price of such articles and collect the same through the disbursing officer.

Third. When invoice slips are turned in O. K. to the officer who made the issue he will return the original memorandum receipt to the person who signed same, and make out new local invoice and memorandum receipt to the person who received the property.

Fourth. When property is lost the person losing same will immediately report the facts to the foreman who is responsible, who (if he is satisfied that the loss was unavoidable) in turn will see that proper affidavits are made out and sworn to without delay.

Fifth. Due care will always be taken to see that tools, etc., are in a safe place when not in use.

L. F. HENEY,
Acting Property Officer.

Approved:
L. W. V. KENNON, *in Charge.*

[Circular.]

BENGUET ROAD PROPERTY DEPARTMENT.

TWIN PEAKS, BENGUET, March 22, 1905.

To all persons responsible for property on the Benguet road:

All foremen or persons in the employ of the Benguet road who are authorized to draw property from the various warehouses are cautioned to preserve the local invoice slips which they receive when signing memorandum receipts. Previous orders to this effect have been issued from time to time, but up to the present very little attention seems to have been paid to them. Neglect on the part of foremen to conform with these rules has caused endless trouble in cases of discharge or resignation, and corresponding delay in the preparation of clearance papers for foremen involved has been the result.

In future any person who does not conform to the regulations approved by the officer in charge, with reference to the turning over of property from one person to another, or the turning in of property to the several assistant property officers, will be held strictly accountable for any resultant loss.

All persons responsible should keep their invoice slips in a safe place to enable them to comply with paragraph 13, property regulations.

L. F. HENEY,

Chief Property Officer, Benguet Road.

Approved:

L. W. V. KENNON, *in Charge.*

EXHIBIT B.

TABLE OF RATIONS.

Ration for one American for ten days.

Meat:		
Fresh beef, 5 days.....	pounds..	5
Fish (cod or salmon).....	do.....	1
Bacon, corned beef, corned-beef hash, with ham and lard, 5 days, not to exceed.....	pounds..	5
Bread:		
Flour.....	do.....	8½
Hard bread.....	do.....	1½
Corn meal.....	do.....	¼
Macaroni.....	do.....	¼
Baking powder.....	do.....	¼
Vegetables:		
Beans, issue.....	do.....	3
String beans, tomatoes, corn, sauerkraut, and succotash, not to exceed.....	do.....	5
Potatoes.....	do.....	10
Onions.....	do.....	2
Coffee.....	do.....	½
Tea.....	do.....	½
Sugar.....	do.....	2½
Fruit:		
Evaporated peaches, apples, and prunes.....	do.....	½
Seasoning:		
Vinegar.....	pints..	½
Salt.....	ounces..	6½
Pepper.....	do.....	½
Mustard.....	do.....	½
Candles (25 men or each mess), 6 candles to a pound.....	pounds..	2
Matches (every 25 men).....	packags..	1
Soap (to 100 rations).....	pounds..	4

Ration for one Japanese, Chinese, or Filipino for ten days.

Fish, 5 days.....	pounds..	2½	Salt.....	ounces..	6½
Fresh beef, 5 days.....	do.....	5	Onions.....	pounds..	2
Lard.....	do.....	½	Vinegar.....	gills..	½
Rice.....	do.....	17½			

In addition to above, Japanese are issued every ten days of Japanese food, 2½ pounds.

Ration for one Sikh watchman for ten days.

Fish.....	pounds..	7½	Candles.....	pounds..	2
Onions.....	do.....	2	Potatoes.....	do.....	7
Vinegar.....	pints..	½	Tea.....	do.....	½
Flour.....	pounds..	10	Sugar.....	do.....	2
Salt.....	do.....	½	Milk.....	cans..	2
Pepper.....	ounces..	½			

EXHIBIT C.

TIME REGULATIONS, BENGUET ROAD.

1. All employees, including native capataces and natives on special work, except natives, Japanese, and Chinese laborers, will be given employment checks or slips by the assistant to the officer in charge stating their occupation and rate of pay and will be assigned to work by him. Native, Chinese, and Japanese laborers, when first employed, will be sent to the point designated by the assistant under the charge of a foreman or other old employee, who will report them to the proper camp foreman for assignment to companies. The conductor of such laborers will be furnished a letter to the camp foreman giving their number, status, and date of employment.

2. When an employee is transferred from one camp to another the foreman of the camp from which the employee is transferred will notify the timekeeper, so that the employee's time may be sent with him. Section foremen may transfer employees from one camp to another within the limits of their own section. Transfers from one section to another will be made only on the order of the division superintendent or by higher authority.

3. Foremen will aid timekeepers by giving them such information as may be requested concerning change of status or whereabouts, etc., of the employees under their charge. Foremen of every grade will personally see that no men work without a metal time tag. On every Sunday each camp clerk will post a bulletin showing the total number of days and hours of work of each employee during the preceding week. Any employee who observes an error in his time, as shown on this bulletin, will report it at once to his foreman. The foreman will confer with the timekeeper, and if the complaint appear just will make report at once through the camp foreman to the disbursing officer, to whom also the timekeeper will report the facts of each case of this kind.

4. Changes of status of employees shall be made only by the officer in charge and shall be reported to the disbursing officer when made.

5. When employees are sent away temporarily, as for timber or grass or to draw rations, the foremen will take the working numbers of the employees so sent and notify the timekeeper, so that these employees may be accounted for.

6. Foremen recommending the discharge of employees will state the reason therefor in writing, but not on the time slip. If the recommendation be approved, the cause of separation will be written across the face of the time slip, which shall then be transmitted to the disbursing officer.

7. The heads of the engineer, commissary, property, and medical departments will send to the disbursing officer on the last day of each month a list of employees of their respective departments, and on the 10th, 20th, and on the last day of each month will similarly forward a trimonthly report of the detailed time of their employees, showing days on which any of their employees may not have worked and any change of status of such employees, together with the names of those discharged or employed and the date of such change, discharge, or employment.

8. Employees will keep their quarters and the ground in the vicinity of the same policed. This shall be done by the whole force the first thing in the morning, but not more than ten minutes will be allowed for this purpose, except in the case of regular police parties.

9. There shall be one timekeeper to take the time of every 200 men, more or less.

10. Timekeepers shall take the time of employees of the road four times daily, twice during the forenoon and twice during the afternoon. The hours of taking the time will be varied from day to day. Timekeepers will personally check every man of their subsections, and when any employee is missing they will endeavor to find him; if unsuccessful, will go to the foreman and find out the whereabouts of the employee or employees so missed. No pains will be spared to render the time reports complete and accurate, and the time reports shall account for every employee in the subsection assigned to the timekeeper.

11. Timekeepers will enter upon their books the names and numbers of all employees who are absent on pass; absent, not on pass; present, sick; present, not sick; and not working.

12. When a new employee reports for work the timekeeper will take up his employment check or slip and issue him a numbered metal time tag and forward the employment slip to the disbursing officer with the first report of the employee's time.

13. At the close of each day timekeepers will make out a report showing the time each employee has worked during that day. This report will also show all employees who are absent "on pass," "present, sick," etc., and will be forwarded to the disbursing officer on the morning of the following day.

14. The report for the first day of the month will carry each employee both by name and number, together with his occupation. Subsequent reports during the month will carry the employee by number only, except when he is transferred, resigns, is discharged, or his status of occupation changed, when the fact will be reported with the employee's name, number, and occupation on the report for the day on which such transfer, etc., was effected.

15. When an employee is transferred from one camp to another the timekeeper of the camp from which he is transferred will not "kill" his number, but will send him with a memorandum of his time-tag number and of his time to date of transfer. The timekeeper of a camp to which an employee is transferred will enter in his time book the employee's number and his time as transferred, and will forward with his first daily report to the disbursing officer the memorandum of the number and time received from the timekeeper of the camp from which he is transferred. The timekeeper of a camp to which an employee is transferred will allow him reasonable time in reporting from one camp to another.

16. When an employee resigns or is discharged the timekeeper will furnish him with a time check showing the time the employee has worked and take up his time tag, which will not be issued again that month. On the back of the time check the timekeeper will enter the number of hours in each day the employee has worked, and if any change of status has occurred during the period covered by the time check it shall be so stated and the time under each status given in detail.

17. On the first day of each month timekeepers will report all monthly men by name, occupation, and place where working. Thereafter, at the end of each week, they will report any shortage of time or change of status that may have occurred among them.

18. All reports of timekeepers, except those herein specifically excepted, will be made direct to the disbursing officer of the road.

19. Ten hours constitute a working day. Overtime on week days and regular time on Sundays will be counted as time and one-half. Work at night will be counted as double time. Timekeepers will report the fact that the employee has worked overtime, on Sundays, or at night, giving the number of hours so worked. The disbursing officer will credit the employee with the extra hours. Monthly men and those daily employees the character of whose work requires the same duties on Sundays as on week days will not be allowed extra time for Sunday work.

INSTRUCTIONS TO TIMEKEEPERS, BENQUET ROAD.

(Based upon certain paragraphs of the foregoing time regulations.)

Timekeepers are employed and work directly under the supervision of the disbursing officer, and are subject to deductions of pay for any errors on their part by which overpayments are made where it clearly appears that they have failed to carry out the requirements of these instructions. Timekeepers must bear in mind that they are employed not only to keep correct time but also to notify the disbursing officer of any changes of the occupation of men, so that the employees of the road can be promptly and correctly paid.

Relative to paragraph 1: When natives, Chinese and Japanese laborers, upon their arrival in camps are assigned to gangs by camp foremen the timekeeper issues them a time check. It is most important that all men covered by this paragraph have time checks given them promptly upon arrival upon the works and that the daily time reports give them credit for their first hours of work. Care will be taken to report all laborers, kitchen helpers, and office boys who are undersized, as such are rated at a lower scale of wages than are full-grown men. Timekeepers will accept the statement of the camp foreman as to the fact of employment in any unusual cases not provided for in the time regulations, but will in any such case report the facts to the disbursing officer at once by memorandum. No time will be given when no duty is performed.

Relative to paragraph 3: The timekeeper must assume that the foreman is working for the best interest of the Benguet road, and timekeepers will accordingly accept their statements relative to changes in status, whereabouts, etc., reporting to the disbursing officer at once by memorandum any unusual facts. Time will never be given when no duty is performed.

The comments on paragraph 3 also apply to paragraph 4.

Relative to paragraph 5: Provisions concerning employees temporarily absent must be observed whether the employees be sent away for only a few hours or for several days.

Relative to paragraph 6: Men discharged or resigning will not be paid at Twin Peaks by the disbursing officer unless they bring with them the time slip or time check referred to in this paragraph, duly signed by their timekeeper. Timekeepers will endeavor to see that ignorant natives, etc., do not leave their camps upon discharge without such time checks.

Relative to paragraph 7: These lists (monthly and trimonthly of various departments) must be complete and accurate and must be promptly transmitted by the timekeepers to the disbursing officer. Should the heads of departments in any camp fail to provide them, the timekeeper should properly ask for them, offering as an explanation that failure to provide these lists which must be complete and accurate will result in delay of the payment of men in their departments. The time of these employees is not checked by timekeepers. The object of this paragraph is to hold the heads of departments in each camp directly responsible for the time of each employee working under them.

Relative to paragraph 10: Timekeepers should not only check the time of the men on the works, but should also check the loafers found about the camp buildings, saloons, etc.

Relative to paragraph 11: The information herein required to be entered upon books of timekeepers must also be entered on the daily time reports, which are forwarded to the disbursing officer.

Relative to paragraph 12: The timekeeper must enter upon the first report of the employee's time his occupation; that is, whether he is a blacksmith, carpenter, laborer, etc. In the case of native labor the timekeeper should note whether he is a capataz, sawyer, carpenter, charcoal burner, kitchen helper, or water boy, etc. Care will be taken to report all laborers, kitchen helpers, and office boys who are undersized, as such are rated at a lower scale of wages than are full-grown men.

Comments on paragraph 11 apply also to paragraph 13.

Relative to paragraph 14: Delay or errors in rendering this report will result in delaying the payment of the entire force. Care will be taken to report all laborers, kitchen helpers, and office boys who are undersized, as such are rated at a lower scale of wages than are full-grown men.

Relative to paragraph 16: See comment to paragraph 3. The change of status most frequently occurring, and which causes the greatest delay in correctly paying employees whose changes of status have not been reported by timekeepers, is in the case of from laborer to capataz or capataz to laborer. Similarly all changes of status must be reported, as from laborer to carpenter, or from laborer to blacksmith, or from laborer to powder man, etc. Accurate and prompt information relative to changes of status, whether Americans, natives, Chinese or Japanese laborers, is absolutely necessary in order that the men may be correctly paid.

Relative to paragraph 17: In checking the daily time of some classes of monthly men, such as watchmen, kitchen helpers, cooks, powder men, carpenters, blacksmiths, etc., they will be given credit for time, if actually present at their places of work and in proper condition for work. All monthly men referred to in this paragraph who are not already numbered must be numbered and be given a metal time tag.

EXHIBIT D.

IMPROVEMENTS IN BENGUET PROVINCE.

[Circular.]

TWIN PEAKS, November 20, 1903.

With the coming of the dry season there is increased danger from the various diseases which attack men living in large camps. In order so far as may be possible to prevent disease the following precautions must be taken and will be observed in every camp on the line of the Benguet road. All foremen or other employees are charged with the enforcement of the rules given herein:

1. Personal cleanliness is important and must be observed by all, but sudden changes of temperature are to be avoided. Bathing after eating is bad.
2. Quarters should be kept dry and all parts exposed to the direct action of the sun where practicable.
3. Bedding and clothing will be well aired daily and exposed to the sun.
4. None but water which has been thoroughly boiled will be drunk. All dishes will be washed in hot water. River water should never be used.
5. None but thoroughly cooked food should be eaten. Raw food and raw vegetables are forbidden.

6. The utmost care must be taken to keep the kitchens and their vicinity perfectly clean and free from any substance liable to decay. All food and dishes when not in use should be covered and protected from flies.

7. In each camp not more than four nor less than one man, as may be necessary, will be detailed to police and to keep the camp clean, to remove all dirt, and to burn all waste which is combustible. Cans which have contained meat or other food subject to decay will also be burned.

8. Proper sinks will be provided and will be used by all. The police party will cover all excrement with earth or lime twice each day—at 9 o'clock a. m. and at 4 o'clock p. m.

9. The above rules will be observed by all persons living on the Benguet road.

L. W. V. KENNON,
Major, Tenth Infantry, in Charge.

EXHIBIT E.

EXCERPT FROM THE ANNUAL REPORT OF THE CHIEF ENGINEER, BENGUET ROAD, FISCAL YEAR 1903.

Unfortunately, the cholera epidemic reached our camps about the beginning of the year, causing the death of some 30 natives and 5 Americans before the line was cleared. The native laborers at once left the work and by the middle of July all Americans except the office force were laid off and work suspended.

It was not possible to obtain labor again after this suspension until the middle of September, when a small force was obtained, various repairs made of damage suffered during the rainy season, and by the 1st of October a gang of some 1,200 men was at work, permitting the continuation of plans outlined for progress ahead, and by whose aid we were enabled to open a good portion of new road in advance.

The prospect at this time seemed encouraging for a number of laborers; men were apparently desirous of work after the inaction of the cholera season, and during the month of October very good progress was made.

In November, however, the gangs fell away as usual, until about two weeks before Christmas work was practically suspended again, and not until the latter part of January was it possible to secure more than 300 men, the general average for the month being 270.

In an attempt to overcome this condition of affairs and to obtain sufficient labor to properly organize some work gangs, I had agents, both Americans and Filipinos, traveling day by day throughout the provinces from Pangasinan to Ilocos Norte seeking labor. These men proceeded from governors of provinces to presidentes, to headmen of barrios, to the men themselves. They told of the work, the wages, and treatment; they offered to escort the men and subside them while traveling to the work, and using all persuasion in their power, assisted to some extent by provincial officials, met with but little success, as their persuasive powers were not sufficiently great to overcome in the native mind a deeply rooted prejudice toward unnecessary exertion.

It was found in some of the northern provinces that the food supply was short, the villages were overflowing with able-bodied men, no work to do, and no money; yet rather than relieve the community of the necessity of their support by working here for a few weeks, and at the same time earning good wages and obtaining subsistence, these men have preferred to lie idle in a state of semistarvation.

The situation was much the same in each province, villages full of men, rice harvested, no apparent work to do, and none sought. Promises were always plentiful by presidentes and headmen that a certain number of laborers would be furnished, yet none or but few would appear, and so, despite agents, letters, and personal appeals to the sources from which our labor is drawn, no result was obtained, and the work has been suffered to drag along, so crippled by constant lack of labor as to make the most unsatisfactory progress, costing as well considerable more than would have been necessary by having a steady regular supply of sufficient labor to properly distribute among the various camps, and so allow an economical organization of office and administrative force.

Labor.—After three years' constant observation of the Filipino as a laborer I have been unable to discover that chord to his nature which, if played upon, would excite within him an interest in his work and cause him to apply himself with diligence and intelligence to its performance. The most deplorable quantity—quality, I should say—to the native as a laborer is his absolute and utter indifference to any work to which he may be assigned. During the hours through which he is supposed to labor the average native performs certain mechanical motions with the tool which may be assigned to him, these motions being his concession to the taskmaster, who has imposed upon him a week's labor, and during the per-

formance of which he waits alone with a perfect stoicism the termination of the day, endeavoring never to work with the accomplishment of a purpose in view, but concerned only with the passing of the hour, knowing that he will be forced to make so many certain motions with the shovel or pick or bar, which he does with painful regularity, cheerful in the belief of his foreman's deception, confident in his own immunity from any undue exertion and indifferent to the accomplishment of work for such labor as he puts forth.

In handling a pick the native will raise it in the air, allow it to drop by its own weight, striking a glancing, infinitesimal blow, and so continue picking gently here and there until observed by the American foreman, who will take the pick, deliver a few steady, well-directed blows, thereby moving more material than the native had been able to loosen in an hour. The foreman leaving him and proceeding to another part of the gang to give the same object lesson will return to discover his first man gently tapping at the hillside and stolidly indifferent as to where his pick falls. Again, with the shovel, he places the blade with the most deliberate care in such loose dirt as he can find, gathers a small portion on the end of the shovel, turns slowly and deliberately, and, if the dump be only 6 feet from him, walks to the extreme edge and then deposits the dirt with great care and walks slowly back for another small portion of a shovelful. Because of these traits it becomes necessary to have a white foreman for every 40 or 50 natives, and it is his continual care to see that they take full shovels of dirt, throw it, if the dump is not over 6 feet, instead of walking to the dump; that they pick with some strength and intelligence as to what they are trying to perform, and that they move in general with some life and spirit. Constant object lessons are given them daily by the foremen as to how the work should be done, but, notwithstanding all lessons, the eye of the foreman is no sooner removed from one part of the gang than they at once revert to their own methods.

I believe it to be possible to eventually train them to a higher state of efficiency, providing the same men would stay on the work for some length of time. As each succeeding week, however, sees new men enter and the departure of the gang working the week before, it is manifestly most difficult to train them, especially as one and all are totally without interest in their work and only waiting for the week to end. It has frequently occurred when, from the nature of the work, a foreman would have his gang separated by a head of slope or point of rock that the portion of the gang not under his immediate observation would post an outlook while one and all would cease further attempt at work. When the foreman would walk in their direction timely warning would be given, and as he stepped around the point every man would be industriously at work.

The Filipino laborer seems, in general, to have but little regard for the money paid him, and not to care whether he receives a full week's pay or is cut for delinquencies during the week. A laborer thus indifferent as to the price of his wage, caring naught for his position or the amount of money the position pays, and with no interest in his work, leaves one with but little hope for his future improvement. His greatest joy would be to lose his position, and his least sorrow the cut of his weekly wage.

In general terms the native laborer has proved himself on this work to be idle, shiftless, and stolidly indifferent, approaching his work with no degree of intelligence or judgment, of a deceptive and treacherous character, wantonly careless and frequently maliciously destructive, uninterested in and indifferent to his work, unwilling to learn and impossible to teach. He refuses to work longer than one week at a time, and each successive week sees new men come in, while the old return to their pueblo. I have known men to come long distances—several days' travel—arrive on their work Friday, make a full day Saturday, and after payment depart that night with the others, after having worked one day and perhaps traveled three or four to reach here.

If a number of natives are sent as packers to bring in timber, grass, or supplies, an American must be sent with them, or, if they have simply a Filipino capataz, they will fail to return until so close to the quitting hour that they can be put at nothing else, and yet not so late as to miss their daily issue of rice.

Although much time and pains has been taken to teach the native proper methods of work, his efficiency is, if anything, less to-day than two years ago, since he seems to have of late attained a certain independence of spirit whereby he refuses to work at any price, while in previous times he would do so, stubbornly and unwillingly though it might be, but nevertheless work he would do of a certain nature.

The Igorrote, although disinclined to present himself for labor, and not as a rule seeking work, still when once he goes at it he makes a fairly good worker. He is cheerful and happy by nature, works with judgment and discretion, putting life and energy into each stroke, and can be trusted out of the sight of an American foreman and still continue his work. He never betrays a trust imposed in him, and, while here and there are a few who do not come up to the general standard, the majority have been found faithful and industrious, their worst point being an unwillingness to remain any long period on the works without returning to the villages for a week or two.

The Igorrote in efficiency is worth about three Filipinos. The cheerfulness and intelligence with which he goes at his work is in strong contrast to the stupidity and apathy of the Filipino, and makes at the same time a strong bond of feeling between them and their foremen, so that an easier and more friendly relation is possible between the laborers and foreman than usually exists when the foreman has in charge a gang of Filipinos. Orders always have been issued restraining foremen from striking or using violence of any kind toward the natives, and in several instances when this order has been disobeyed men were discharged. This has never occurred with the Igorrote, however, as none but the most kindly feelings have always existed between them and their foremen.

The general average of a Filipino laborer is from one-fifth to one-tenth that of an ordinary white laborer's work in America. In gangs where natives and Americans have worked together on the road, the following proportions have been measured:

Drilling by churn drills in hard rock:

- 3 Americans, 6 feet in 6 hours.
- 3 Americans, 5 feet in 4 hours.
- 3 Americans, 10 feet in 9 hours.
- 3 Americans, 8 feet in 9 hours.
- 3 Americans, 12 feet in 9 hours.

By hammer drills:

- 3 Americans, 6½ feet in 3 hours.
- 3 Americans, 1½ feet in 1 hour.
- 3 Americans, 8 feet in 4 hours.

Natives with churn drills:

- 3 Filipinos, 1½ feet in 7 hours.
- 4 Filipinos, 1½ feet in 7 hours.
- 3 Filipinos, 2 feet in 9 hours.
- 2 Igorrotes, 2½ feet in 9 hours.
- 2 Igorrotes, 1½ feet in 5½ hours.
- 3 Igorrotes, 4 feet in 9 hours.
- 3 Igorrotes, 6 feet in 9 hours.

Moving loose dirt Americans will shovel over 6 feet lead 20 yards per 9 hours; Filipinos, 3 yards per 9 hours; Igorrotes (with 3 feet lead), 10.8 yards per 9 hours.

These measurements are taken from daily reports and given as general averages, showing some of the smallest and largest work done per day.

It is noticeable that a white man's efficiency in this climate does not reach higher than two-thirds that of the ordinary white laborers in America. American labor, while competent, is uncertain. Many of the men applying for employment here are not laborers, but have filled positions in America unfitting them for hard manual labor. Others having gone through the many sicknesses peculiar to a white man in this country and are so enfeebled and broken down that, notwithstanding the greatest desire on their part to perform their work, they are physically unable to do so. The hot sun is apt also to make ill the strongest in time, and this canyon is the abiding place of fever, which sooner or later strikes down every white man resident here.

For these reasons a large American force means a large sick report, and the contingent expense of medicine, care, and subsistence. Therefore the most economical and satisfactory class of labor would seem to be either Chinese or Japanese, both of whom are well-known workers, do not demand high wages, are keen for the money they can earn, and are not subject to sickness.

The Filipino has proved himself more expensive than white labor, and one might say is practically valueless. There is, moreover, a spirit of maliciousness prevailing among these people, leading them to commit many overt acts, such as thefts, assaults, and willful destruction of property. This has been instanced in several robberies where tool boxes were broken open, some tools stolen, and others thrown and scattered around in the adjacent brush; in the slicing and nicking of freshly painted bridges; in the total destruction of a large sign, "Benguet Road," at the beginning of the road, as well as the destruction of numerous painted boards having bridge numbers thereon and placed beside each bridge; in the attempt to burn down one bridge, thereby destroying several stringers and portion of flooring before discovery; in the attacking of a timekeeper with bolos; the mutilation of several horses belonging to the work, slashing them with bolos, etc.; the willful destruction of portions of completed road, damming up ditches, blocking gutters and culverts, and many other instances of similar character.

EXHIBIT F.

SCALE OF WAGES AND SALARIES.

American laborers:		
First-class foreman.....	per month..	\$100.00
Second-class foreman.....	do.....	90.00
Third-class foreman.....	do.....	75.00
Fourth-class foreman.....	do.....	60.00
Mason foreman.....	do.....	90.00
Timekeeper.....	do.....	60.00
Camp clerk and mess steward.....	do.....	60.00
Hospital steward.....	do.....	75.00
Hospital attendant.....	do.....	60.00
Blacksmith.....	per diem..	2.50, 3.00
Carpenter.....	do.....	2.50, 3.00
Mechanic.....	do.....	2.50
Powder man.....	do.....	2.50
Mason.....	do.....	3.00
Mason's helper.....	do.....	2.00, 2.50
Acting foreman.....	do.....	2.00, 3.00
Laborer.....	do.....	1.00, 1.50
Native laborers:		
Carpenter, capataz.....	do.....	.75
Carpenter.....	do.....	.50
Sawyer.....	do.....	.50
Capataz.....	do.....	.50
Charcoal burner, capataz.....	do.....	.75
Charcoal burner.....	do.....	.375
Laborer ^a	do.....	.25
Water carrier.....	do.....	.125
Japanese and Chinese laborers:		
Blacksmith (Japanese).....	do.....	1.50
Carpenter (Japanese).....	do.....	1.50
Capataz.....	do.....	1.50
Laborer.....	do.....	1.00
First cook (Chinese).....	per month..	30.00
Second cook (Chinese).....	do.....	20.00

EXHIBIT G.

PERMANENT LEVEL BENCH MARKS BETWEEN BAGUIO, BENGUET, AND SAN FERNANDO DE UNIÓN ESTABLISHED BY H. M. MICKLE IN MARCH AND APRIL, 1905.

NOTE.—All elevations are referred to sea level and are based on the United States Coast and Geodetic Survey bench mark at San Fernando, Unión.

A metric rod was used in obtaining differences of level, but elevations are given in feet; in reduction, the length of meter was assumed to be 3.28 feet.

The level was a K. & E. No. 6363.

Bench-mark number.	Description.	Elevation.
		<i>Feet.</i>
1	The Baguio triangulation station is 1.2 feet lower than the bench mark, which is a 10-inch spike driven in root of large tree near station.....	4,892.674
7	Is on a 10-inch spike driven in root of pine tree 2 feet in diameter, 250 feet south of Limestone triangulation station. Tree is burned on one side and is closest one of its size to station. The triangulation station is 26.9 feet higher than the bench mark.....	5,143.692
14	Is a spike in root of pine tree 1 foot in diameter, 10 feet left of Naguillian trail and Trinidad road. Tree is nearest to trail of two trees the same size and standing alone.....	3,937.449
16	Is a spike in crotch of forked tree 25 feet left of trail. Tree is 300 feet beyond only house in Yagyagan, and is about 10 feet below level of trail. The bench mark is 5 feet from ground.....	3,659.732

^a Subject to raise according to length of continuous service or individual capacity.

Bench-mark number.	Description.	Elevation.
		<i>Feet.</i>
27	Is on root of lone tree 18 inches in diameter, 30 feet right of road, in center of town of Sablan, about 30 feet from southeast end of constabulary quarters. Tree has a bell hanging from limb.	1,735.657
37	Is a 10-inch spike in notch cut in tree 14 inches in diameter, on left side lane leading Ripsuan River, 200 feet from river crossing, 50 feet beyond two houses facing each other. These are the only houses near where road crosses river; bench mark is 15 feet from ground.	108.177
45	10-inch spike in root of tree 3 feet in diameter, 30 feet in front of Presidencia building in town of Naguilian. Tree forks 10 feet from ground and has three prongs about 1 foot in diameter in line with each other in this shape Ψ ; bench mark 1 foot from ground. The tree has stones piled around its roots.	63.637
54	10-inch spike in root of tree 16 inches in diameter, standing just outside bamboo fence around church ground and 100 feet directly in front of Presidencia building in town of Baoang.	30.566
66	Spike driven in center pile of first row of piles of old pier in town of San Fernando; pile is just in edge of masonry and has been cut off flush with masonry.	10.184
67	Spike in top of post 6 inches in diameter and 4 feet long, set flush with ground near Insurrect triangulation station. Bench mark is marked by post set alongside bench mark and projecting 3 feet above surface of ground, with bench-mark number painted on it.	200.952
USCGS No. 1.	From Coast Survey records: "The bench mark on the pier at San Fernando is on a pile about 40 meters from stone abutment. The pile is on the north side of the twelfth row from abutment, and the mark is on the southeast edge about 3 feet from top of pile. The mark is a notch 1 inch wide and 1 inch deep, cut in corner of pile, and bench mark is lower edge of notch. Bench mark No. 1 is 8.2 feet above the Coast Survey plane of reference, which is the mean of the lower low waters, as determined from a short series of tidal observations in April, 1901. (Mean sea level is about 0.7 foot above the plane of reference)"	8.2

EXHIBIT H.

BENGUET ROAD TRIANGULATION.

The field work of the Benguet road triangulation was executed by Mr. Charles G. Benson, C. E. The reductions and computations were by the officer in charge.

The angles were measured with a Brandis repeating transit, reading to 30 seconds of arc. Each angle was repeated six times, from right to left and from left to right, with telescope direct and reversed, making 24 readings of each angle. In addition, the sum angles were measured in the same manner at each station.

The base line of the survey is the line Insurrect-Ball of the United States Coast and Geodetic Survey triangulation of Lingayen Gulf. The coordinates of the ends of this line were given as follows:

Station.	Latitude	Longitude.	Azimuth.	Logarithm.
	° ' "	° ' "	° ' "	<i>Meters.</i>
Insurrect.....	16 36 56.00	120 18 48.84	23 43 30.3	3.568423
Ball.....	16 35 05.74	120 17 58.59	203 43 15.4	

The azimuth from Insurrect to Ball was assumed to be correct, and the following work depends upon its values, as above stated.

Distances are expressed in Clarke's meter, for which the logarithmic factor to reduce to equivalent in yards is 0.038867.

Computations were carried out to hundredths of seconds to secure a check on the arithmetical accuracy of the work. From the angles, first adjusted locally, were formed quadrilaterals, each of which was adjusted independently of the others. After adjustment the sides were assumed to be without error.

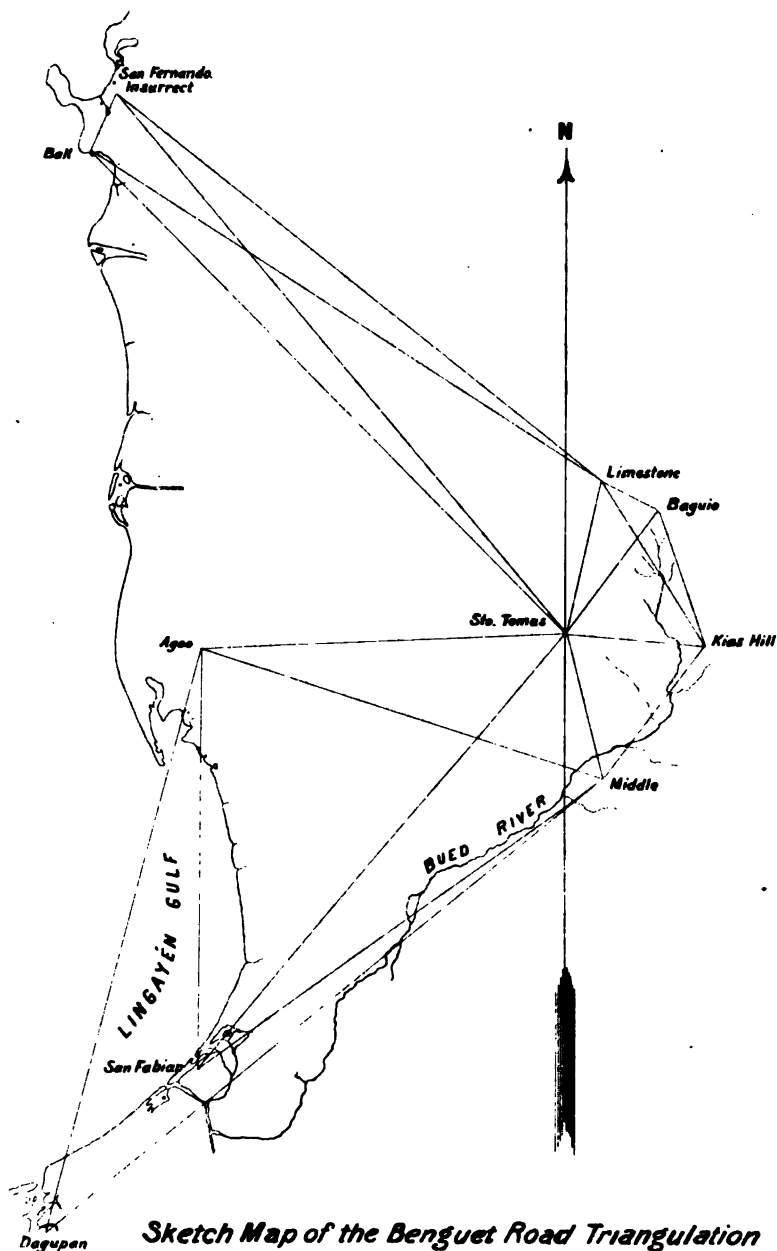
The quadrilaterals formed were:

1. Insurrect-Limestone-Santo Tomas-Ball.
2. Santo Tomas-Limestone-Baguio-Kias Hill.
3. Santo Tomas-Middle-San Fabian-Ago6.

The triangles, Santo Tomas-Kias Hill-Middle, and Middle-Dagupan-Ago6, were independently adjusted.

The actual measured values of angles can not be given, as the original notes of the work were destroyed in the fire of March 11, 1905.

**Sketch Map of the Benguet Road Triangulation.
1904.**



**Sketch Map of the Benguet Road Triangulation
1904.**

1. The first part of the paper is devoted to the study of the properties of the function $f(x)$ defined by the equation

$$f(x) = \int_0^x f(t) dt$$

and

2.

3.

4.

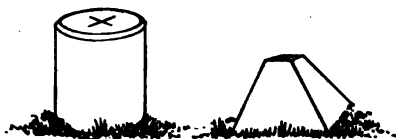
5. The second part of the paper is devoted to the study of the properties of the function $f(x)$ defined by the equation

$$f(x) = \int_0^x f(t) dt$$

The values of the angles, after local and final adjustment, are given in the first table below.

The solution of the triangles, the measured vertical angles, the geographical coordinates of the several stations occupied, computed by the usual formulas, and the elevations of the stations are also given in the tables subjoined.

The elevations depend upon the United States Coast and Geodetic Survey bench mark at San Fernando, with which, by a single line of levels in one direction, the stations Insurrect, Limestone, and Baguio were directly connected. The bench marks near these stations are described in Exhibit G of this report. The remaining elevations were computed trigonometrically.



A cylindrical, concrete monument, 18 inches high and 14 inches in diameter, marks the station at Baguio, which is near the northern boundary of the military reservation. An azimuth mark is located N. $12^{\circ} 28' 01''$ W. and about 100 feet from the triangulation station. It is in shape a truncated pyramid, about 12 inches in height and about 4 inches across the top.

TABLE I.—*Measured angles.*

Stations occupied.	Angles measured between—	Measured value.			Adjusted value.	Differences.
		°	'	"		
Insurrect.....	Limestone and Santo Tomas.....	11	27	06.15	06.40	0.31
	Santo Tomas and Ball.....	65	51	12.08	12.21	0.13
Ball.....	Insurrect and Limestone.....	98	38	27.05	27.20	0.15
	Limestone and Santo Tomas.....	12	39	58.09	58.48	0.39
Limestone.....	Ball and Insurrect.....	6	03	15.13	14.45	0.68
	Baguio and Kias Hill.....	31	17	52.31	56.45	4.14
	Kias Hill and Santo Tomas.....	44	57	41.37	39.85	1.52
	Santo Tomas and Ball.....	114	28	58.07	56.64	0.57
Santo Tomas.....	Ball and Insurrect.....	4	55	20.94	22.45	1.51
	Insurrect and Limestone.....	48	00	42.68	43.18	0.48
	Limestone and Baguio.....	24	20	14.24	14.00	0.24
	Baguio and Kias Hill.....	58	00	02.37	00.84	1.53
	Kias Hill and Middle.....	70	23	30.80	34.28	3.48
	Middle and San Fabian.....	55	13	05.54	02.70	2.84
Baguio.....	San Fabian and Agoó.....	47	08	24.82	28.10	3.28
	Kias Hill and Santo Tomas.....	55	30	37.30	40.87	3.57
	Santo Tomas and Limestone.....	79	24	06.35	09.79	3.44
Kias Hill.....	Middle and Santo Tomas.....	51	58	43.98	47.46	3.48
	Santo Tomas and Limestone.....	52	42	06.48	05.50	0.98
	Limestone and Baguio.....	13	47	11.25	12.95	1.70
Middle.....	Dagupan and Agoó.....	56	26	00.00	58.04	.....
	San Fabian and Agoó.....	53	01	55.06	53.30	1.76
	Agoó and Santo Tomas.....	57	28	28.17	25.15	1.02
San Fabian (belfry).....	do.....	40	01	28.48	30.02	1.54
	Santo Tomas and Middle.....	14	16	34.63	29.32	4.69
Agoó.....	do.....	20	10	06.15	04.41	1.74
	Middle and San Fabian.....	72	39	54.90	58.49	3.59
	Middle and Dagupan.....	87	13	00.00	56.47	.....
Dagupan (belfry).....	Agoó and Middle.....	36	19	00.00	07.18	.....

TABLE II.—*Solution of the triangles.*

QUADRILATERAL, BALL-INSURRECT-LIMESTONE-SANTO TOMAS.

	Spherical angles.			Plane angles.			Logarithm.
	°	'	"	°	'	"	Meters.
Ball to Insurrect.							3.5684230
Limestone	6	03	14.45	6	03	14.34	0.9768699
Ball	98	38	27.20-0.32	98	38	27.10	9.9650423
Insurrect	75	18	18.67	75	18	18.56	9.9855570
Insurrect to Limestone							4.5403552
Limestone to Ball							4.5306699
Insurrect to Limestone							4.5403552
Santo Tomas	48	00	43.16	48	00	42.92	0.1288452
Insurrect	11	27	06.46-0.71	11	27	06.23	9.2978531
Limestone	120	32	11.09	120	32	10.85	9.9351579
Limestone to Santo Tomas							3.9670535
Santo Tomas to Insurrect							4.6043583
Limestone to Santo Tomas							3.9670535
Ball	12	34	58.48	12	34	58.24	0.6618404
Limestone	114	28	56.64-0.73	114	28	56.39	9.9590839
Santo Tomas	52	56	05.61	52	56	05.37	9.9019759
Santo Tomas to Ball							4.5879778
Ball to Limestone							4.5306698
Santo Tomas to Ball							4.5879778
Insurrect	63	51	12.21	63	51	12.09	0.0468837
Santo Tomas	4	55	22.45-0.34	4	55	22.34	8.9335614
Ball	111	13	25.68	111	13	25.57	9.9694968
Ball to Insurrect							3.5684229
Insurrect to Santo Tomas							4.6043583

QUADRILATERAL, LIMESTONE-BAGUIO-KIAS HILL-SANTO-TOMAS.

Santo Tomas to Limestone							3.9670535
Baguio	79	24	09.79-0.03	79	24	09.76	0.0074712
Santo Tomas	24	20	14.00-0.03	24	20	13.97	9.6150093
Limestone	76	15	36.30-0.03	76	15	36.27	9.9873909
Limestone to Baguio							3.5895340
Baguio to Santo Tomas							3.9619156
Limestone to Baguio							3.5895340
Kias Hill	13	47	12.95-0.02	13	47	12.93	0.6228544
Limestone	31	17	56.45-0.02	31	17	56.43	9.7155891
Baguio	134	54	50.66-0.02	134	54	50.64	9.8501354
Baguio to Kias Hill							3.9279775
Kias Hill to Limestone							4.0625238
Baguio to Kias Hill							3.9279775
Santo Tomas	58	00	00.84-0.05	58	00	00.79	0.0715785
Baguio	55	30	40.87-0.05	55	30	40.82	9.9160528
Kias Hill	66	29	18.45-0.06	66	29	18.39	9.9623597
Kias Hill to Santo Tomas							3.9150088
Santo Tomas to Baguio							3.9619157
Kias Hill to Santo Tomas							3.9150088
Limestone	44	57	39.85-0.06	44	57	39.79	0.1508104
Kias Hill	52	42	05.50-0.06	52	42	05.44	9.9006344
Santo Tomas	82	20	14.84-0.07	82	20	14.77	9.9961045
Santo Tomas to Limestone							3.9670536
Limestone to Kias Hill							4.0625237

TABLE II.—*Solution of the triangles*—Continued.

TRIANGLE, MIDDLE-SANTO TOMAS-KIAS HILL.

	Spherical angles.			Plane angles.			Logarithm.
	°	'	"	°	'	"	
Santo Tomas to Kias Hill.....							<i>Meters.</i> 3.9156088
Middle.....	57	39	38.41-0.05	57	39	38.36	0.0731974
Santo Tomas.....	70	23	34.28-0.05	70	23	34.23	9.9740581
Kias Hill.....	51	56	47.46-0.05	51	56	47.41	9.8962150
Kias Hill to Middle.....							3.9628643
Middle to Santo Tomas.....							3.8850212

TRIANGLE, MIDDLE-KENNON-KIAS HILL.

Kias Hill to Middle.....							3.9628643
Kennon.....	98	27	08.10				0.0047428
Kias Hill.....	59	55	36.00				9.9372092
Middle.....	21	37	15.90				9.5663982
Middle to Kennon.....							3.9048163
Kennon to Kias Hill.....							3.5340053

QUADRILATERAL, SANTO TOMAS-MIDDLE-SAN FABIAN-MOUNT AGOÓ.

Santo Tomas to Middle.....							3.8850212
San Fabian.....	14	16	39.32	14	16	39.16	0.6079731
Santo Tomas.....	55	13	02.70	55	13	02.54	9.9145136
Middle.....	110	30	18.45-0.47	110	30	18.30	9.9715732
Middle to San Fabian.....							4.4075079
San Fabian to Santo Tomas.....							4.4645675
Middle to San Fabian.....							4.4075079
Mount Agoó.....	72	39	58.49	72	39	58.12	0.0201854
Middle.....	53	01	53.30	53	01	52.92	9.9025276
San Fabian.....	54	18	09.34-1.13	54	18	08.96	9.9096142
San Fabian to Mount Agoó.....							4.3302209
Mount Agoó to Middle.....							4.3373075
San Fabian to Mount Agoó.....							4.3302209
Santo Tomas.....	47	08	28.10	47	08	27.76	0.1348781
San Fabian.....	40	01	30.02-1.02	40	01	29.68	9.8082924
Mount Agoó.....	92	50	02.90	92	50	02.56	9.9994685
Mount Agoó to Santo Tomas.....							4.2733914
Santo Tomas to San Fabian.....							4.4645675
Mount Agoó to Santo Tomas.....							4.2733914
Middle.....	57	28	25.15	57	28	25.03	0.0740983
Mount Agoó.....	20	10	04.41-0.36	20	10	04.29	9.5375316
Santo Tomas.....	102	21	30.80	102	21	30.68	9.9898179
Santo Tomas to Middle.....							3.8850213
Middle to Mount Agoó.....							4.3373076

TRIANGLE, MOUNT AGOÓ-MIDDLE-DAGUPAN.

Mount Agoó to Middle.....							4.3373075
Dagupan.....	36	19	07.18	36	19	06.62	0.2274778
Mount Agoó.....	87	13	56.47-1.69	87	13	55.90	9.9994925
Middle.....	56	26	58.04	56	26	57.48	9.9208520
Middle to Dagupan.....							4.5642778
Dagupan to Mount Agoó.....							4.4856373

TABLE III.—*Mean vertical angles.*

Station.	To station at—	Vertical angles.
		° ' "
Insurrect.....	Limestone.....	+2 24 00
	Santo Tomas.....	+2 50 30
	Ball.....	-0 17 30
Ball.....	Insurrect.....	+0 17 30
	Santo Tomas.....	+3 07 30
	Limestone.....	+2 29 30
Limestone.....	Ball.....	-2 45 00
	Santo Tomas.....	+4 02 30
	Kias Hill.....	-0 17 30
Santo Tomas.....	Baguio.....	-1 17 30
	Insurrect.....	-2 40 00
	Mount Agoó.....	-6 05 00
	Ball.....	-3 24 00
	Insurrect.....	-3 16 00
	Limestone.....	-4 05 00
	Baguio.....	-4 43 15
	Kias Hill.....	-4 58 00
	Middle.....	-7 19 00
	Dagupan.....	-3 19 30
	San Fabian.....	-4 29 00
Baguio.....	Limestone.....	+1 14 30
	Santo Tomas.....	+4 38 00
	Kias Hill.....	+0 13 30
Kias Hill.....	Baguio.....	-0 17 00
	Limestone.....	+0 12 00
	Santo Tomas.....	+4 54 00
Middle.....	Middle.....	-1 42 00
	Kias Hill.....	+1 38 30
	Santo Tomas.....	+7 15 00
	Dagupan.....	-2 07 00
	Mount Agoó.....	-2 43 00
Mount Agoó.....	Agoó belfry.....	-6 16 00
	Santo Tomas.....	+5 57 30
	San Fabian.....	-0 46 00
San Fabian (belfry) ...	Middle.....	+2 34 00
	Mount Agoó.....	+0 37 00
	Santo Tomas.....	+4 16 00
Dagupan.....	Middle.....	+2 43 00
	Mount Agoó.....	+0 23 00
	Santo Tomas.....	+3 01 30
	Middle.....	+1 50 00

EXHIBIT I.

BAGUIO TRIANGULATION.

The Baguio triangulation was executed by Mr. Charles G. Benson, C. E., the angles being measured with a Brandis repeating transit reading to 30 seconds of arc. Each angle was measured by Borda's method, three repetitions, telescope direct and reversed from left to right, and then from right to left; also with telescope direct and reversed. In general, sun angles were measured at each station.

The triangulation depends upon the line Baguio-Limestone of the Benguet Road triangulation. Distances are expressed in Clarke's meter, for which a logarithmic factor to reduce to equivalent in yards is 0.0388677. The total area covered by the triangulation is so small that spherical excess was neglected. The computations were carried out to hundredths of seconds to secure a check on the arithmetical accuracy of the work. The elevation of the ground at Baguio Station is 4,891.474 feet; of the bench mark, 4,892.674 feet, as determined by spirit level, connecting with the United States Coast and Geodetic Survey bench mark at San Fernando, Unión.

The geographical coordinates of the assumed base line are as follows:

Station.	Latitude.	Longitude.	Azimuth.	Logarithm.
	° ' "	° ' "	° ' "	Meters.
Baguio.....	16 24 27.14	120 36 06.90	111 42 19.17	3.5895340
Limestone.....	16 25 13.89	120 34 05.21	291 41 44.78	

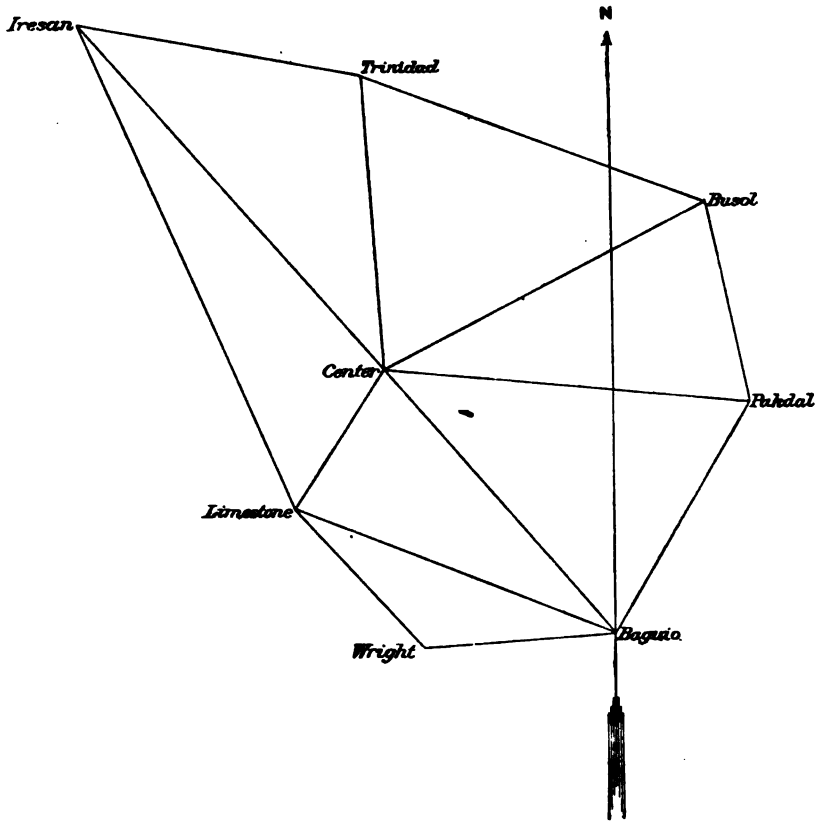
The measured angles were adjusted locally. The figure was then divided into quadrilaterals, each of which was adjusted independently of the others to satisfy the angle equations only. The quadrilaterals formed were :

1. Baguio-Wright-Limestone-Center.
2. Limestone-Iresan-Trinidad-Center.
3. Trinidad-Busol-Pakdal-Center.

The triangle Pakdal-Baguio-Center was adjusted independently.

SKETCH OF BAGUIO TRIANGULATION.

[Scale 1"=1,300 miles.]



With the resulting values adjustment for side equation was made, considering the Figure as a central polygon, the base line, Baguio to Limestone, being taken as one of the sides.

The position of Wright was determined by the adjustment by successive approximations of the first quadrilateral given above.

The measured values of the angles, the value after local adjustment, the final value, and the solution of the triangles are given in the following tables:

Stations occupied.	Angles measured between.				Locally cor- rected angles.
		°	'	"	
Wright.....	Limestone and Iresan.....	14	20	42.81	42.34
	Iresan and Center.....	20	23	16.88	16.41
	Center and Pakdal.....	62	04	47.81	47.34
	Limestone and Pakdal.....	96	48	45.63	46.06
Baguio.....	Limestone and Baguio.....	129	28	21.88	17.61
	Wright and Limestone.....	25	05	38.13	38.60
	Limestone and Center.....	27	10	34.38	34.84
	Center and Pakdal.....	72	20	23.13	23.60
Limestone.....	Wright and Pakdal.....	124	36	37.50	37.04
	Iresan and Trinidad.....	32	30	20.00	30.00
	Trinidad and Center.....	24	07	65.31	55.75
	Center and Pakdal.....	44	22	55.94	56.00
Iresan.....	Pakdal and Baguio.....	34	10	40.31	40.37
	Baguio and Wright.....	25	26	07.81	07.86
	Iresan and Wright.....	160	37	44.38	44.33
	Trinidad and Busol.....	5	31	46.56	48.06
Trinidad.....	Busol and Center.....	32	48	21.25	22.75
	Center and Wright.....	12	00	50.31	51.81
	Wright and Limestone.....	5	01	24.06	25.56
	Trinidad and Limestone.....	55	22	29.69	28.18
Busol.....	Busol and Center.....	65	11	03.75	04.75
	Pakdal and Center.....	45	31	09.38	09.88
	Center and Limestone.....	12	54	23.75	23.32
	Limestone and Iresan.....	92	07	02.50	02.06
Pakdal.....	Center and Iresan.....	105	01	23.44	25.38
	Busol and Iresan.....	170	12	30.62	30.13
	Pakdal and Center.....	74	47	11.88	.....
	Center and Iresan.....	43	19	08.44	.....
Baguio.....	Iresan and Trinidad.....	4	15	25.83	.....
	Baguio and Wright.....	22	43	58.75	59.31
	Wright and Limestone.....	23	34	17.19	17.74
	Limestone and Center.....	17	56	37.19	37.74
Center.....	Center and Trinidad.....	35	07	08.75	09.83
	Trinidad and Busol.....	37	58	11.25	12.32
	Center and Busol.....	73	05	20.00	22.15
	Baguio and Busol.....	137	30	17.50	16.94
Wright.....	Wright and Limestone.....	25	05	38.13	38.60
	Limestone and Center.....	27	10	34.38	34.84
	Center and Pakdal.....	72	20	23.13	23.60
	Wright and Pakdal.....	124	36	37.50	37.04
Limestone.....	Baguio and Wright.....	32	59	36.88	37.01
	Wright and Limestone.....	41	16	23.44	23.57
	Limestone and Iresan.....	106	19	26.88	27.01
	Iresan and Trinidad.....	36	38	14.69	14.82
Trinidad.....	Trinidad and Busol.....	67	14	29.38	29.52
	Busol and Pakdal.....	32	07	04.06	04.19
	Pakdal and Baguio.....	43	24	43.75	43.88

Solution of the triangles.

Station.	Angle.			Logarithm.
	°	'	"	
Baguio to Limestone.....				3.3895340
Center.....	74	15	56.42	0.0165860
Baguio.....	27	10	31.04	9.6506446
Limestone.....	78	33	32.54	9.9912835
Limestone to Center.....				3.2657646
Center to Baguio.....				3.5974035
Center to Limestone.....				3.2657646
Iresan.....	78	02	15.19	0.5337248
Center.....	106	19	24.65	9.9821310
Limestone.....	56	38	20.16	9.9218018
Limestone to Iresan.....				3.7810304
Iresan to Center.....				3.7207012
Center to Iresan.....				3.7207012
Trinidad.....	105	01	29.71	0.0151066
Center.....	36	38	17.52	9.7757967
Iresan.....	38	20	12.77	9.7925606
Ireson to Trinidad.....				3.5116078
Trinidad to Center.....				3.5283987
Center to Trinidad.....				3.5283987
Busol.....	47	34	32.08	0.1318449
Center.....	67	14	27.79	9.9647971
Trinidad.....	65	11	00.13	9.9579211
Trinidad to Busol.....				3.6250407
Busol to Center.....				3.6181647
Center to Busol.....				3.6181647
Pakdal.....	73	05	32.88	0.0191901
Center.....	32	07	10.05	9.7256555
Busol.....	74	47	17.07	9.9845101
Busol to Pakdal.....				3.3630103
Pakdal to Center.....				3.6218649
Center to Pakdal.....				3.6218649
Baguio.....	72	20	22.71	0.0206656
Center.....	43	24	43.57	9.8371091
Pakdal.....	64	14	53.72	9.9545730
Pakdal to Baguio.....				3.4796396
Baguio to Center.....				3.5974035
Center to Baguio.....				3.5974035
Wright.....	94	44	19.69	0.0014871
Center.....	32	59	35.75	9.7360301
Baguio.....	52	16	04.56	9.8981112
Baguio to Wright.....				3.3349207
Wright to Center.....				3.4970018
Baguio to Wright.....				3.3349207
Limestone.....	25	26	11.76	0.3670246
Baguio.....	25	05	33.52	9.6274510
Wright.....	129	28	14.72	9.8875887
Wright to Limestone.....				3.3263963
Limestone to Baguio.....				3.5985340
Wright to Limestone.....				3.3263963
Center.....	41	16	20.67	0.1806632
Wright.....	34	43	55.03	9.7566751
Limestone.....	103	59	44.30	9.9669124
Limestone to Center.....				3.2657646
Center to Wright.....				3.4970019

The following mean vertical angles were measured with telescope direct and reversed:

Station.	To station—	Vertical angles.
		° ' "
Bagulo.....	Wright.....	+1 34 30.0
	Limestone.....	+1 15 00.0
	Center.....	+0 52 00.0
	Pakdal.....	+3 09 30.0
Wirght.....	Limestone.....	+0 41 00.0
	Iresan.....	-0 07 30.0
	Center.....	+0 01 00.0
	Pakdal.....	+1 20 00.0
Limestone.....	Bagulo.....	-1 34 30.0
	Iresan.....	-0 25 00.0
	Trinidad.....	-1 32 00.0
	Center.....	-0 45 30.0
	Busol.....	+1 12 30.0
	Pakdal.....	+0 53 30.0
	Bagulo.....	-1 15 00.0
	Wright.....	-0 42 00.0
Iresan.....	Trinidad.....	-1 35 30.0
	Busol.....	+1 16 00.0
	Pakdal.....	+0 47 00.0
	Center.....	+0 10 30.0
	Wright.....	+0 05 00.0
Trinidad.....	Limestone.....	+0 22 30.0
	Busol.....	+3 28 30.0
	Pakdal.....	+2 06 45.0
	Center.....	+1 49 07.5
	Limestone.....	+1 29 30.0
Busol.....	Iresan.....	+1 33 30.0
	Pakdal.....	-1 05 15.0
	Wright.....	-1 29 30.0
	Limestone.....	-1 21 15.0
	Center.....	-2 05 45.0
	Iresan.....	-1 19 15.0
	Trinidad.....	-3 29 15.0
Pakdal.....	Bagulo.....	-3 10 00.0

The following elevations were computed, dependent upon the elevations of Bagulo and Limestone:

Station.	Elevation.	Station.	Elevation.
	<i>Feet.</i>		<i>Feet.</i>
Bagulo.....	4,891	Center.....	5,094
Wright.....	5,086	Trinidad.....	4,740
Limestone.....	5,170	Busol.....	5,582
Iresan.....	5,034	Pakdal.....	5,439

TABLE IV.—Geographical positions determined by Benguet road triangulations.

Station.	Latitude.	Longitude.	Azimuth.	Back azimuth.
	° ' "	° ' "	° ' "	° ' "
Insurrect.....	16 36 56.00	120 18 48.84	308 25 11.63 23 43 30.30 319 52 18.09	128 29 32.17 203 43 15.94 139 56 25.73
Ball.....	16 35 05.74	120 17 58.59	302 21 43.14 314 56 41.62	122 28 17.72 135 01 03.28
Limestone.....	16 25 13.89	120 34 05.21	291 41 44.78 322 59 41.23	111 42 19.17 143 00 47.26
Baguio.....	16 24 27.14	120 36 06.91	7 57 21.08 336 47 28.51	187 57 08.89 156 48 00.21
Klas Hill.....	16 20 13.82	120 37 59.39	32 18 09.38 90 18 41.76	212 17 22.89 270 17 23.73
Kennon.....	16 20 29.87	120 36 05.38	38 21 54.30 98 17 30.30	218 21 00.42 278 16 58.23
Tomas.....	16 20 15.23	120 33 21.99	16 44 06.49 340 40 58.01	196 43 44.62 160 41 22.01
Middle.....	16 16 19.62	120 34 47.48	35 54 00.71 83 02 28.81	215 51 19.94 262 59 32.39
San Fabian (belfry).....	16 07 26.94	120 23 46.83	103 12 56.86 50 11 03.56	283 09 36.80 230 07 59.26
Mount Agoó.....	16 19 01.00	120 22 54.44	175 49 49.92 10 23 33.27	255 49 35.29 190 22 41.53
Dagupan (belfry).....	16 02 41.96	120 19 48.78	226 41 48.71	46 45 58.82

Station.	To station at—	Distance.	Logarithms.	Distance.	Elevations.
		Meters.	Meters.	Miles.	Fect.
Insurrect.....	Limestone.....	34,702	4.5403552	21.56	201
	Ball.....	3,702	3.5684230	2.30	
	Tomas.....	40,212	4.6043583	24.99	
Ball.....	Limestone.....	33,952	4.5308699	21.10	139
	Tomas.....	38,723	4.5879778	24.06	
Limestone.....	Baguio.....	3,886	3.5895340	2.41	5,171
	Klas Hill.....	11,548	4.0625237	7.18	
	Tomas.....	9,629	3.9670535	5.76	
Baguio.....	Klas Hill.....	8,472	3.9279775	5.26	4,891
	Tomas.....	9,160	3.9619156	5.69	
Klas Hill.....	do.....	8,234	3.9150088	5.12	5,011
	Middle.....	9,180	3.9628643	5.70	
Kennon.....	Kennon.....	3,420	3.5340053	2.13	
	Middle.....	8,032	3.9048165	4.99	
Tomas.....	do.....	7,674	3.8850212	4.77	7,340
	San Fabian.....	29,146	4.4645675	18.11	
	Mount Agoó.....	18,767	4.2733914	11.66	
Middle.....	do.....	21,742	4.3373076	13.51	4,133
	San Fabian.....	25,557	4.4075079	15.88	
San Fabian (belfry).....	Mount Agoó.....	21,390	4.3302209	13.29	
Mount Agoó.....	Dagupan.....	30,594	4.4856373	19.01	842
Dagupan (belfry).....	Middle.....	36,667	4.5642778	22.78	

APPENDIX I.

PRELIMINARY PLAN OF BAGUIO, PROVINCE OF BENGUET, P. I.

By D. H. BURNHAM and PEIRCE ANDERSON.

EXPLANATORY NOTE.

CHICAGO, ILL., June 27, 1905.

The first question to be determined with regard to the general scheme of location of a town site within the limits of the present Baguio reservation is the probable size of the future town. The present indications point to the development in the near future of a town not exceeding 25,000 inhabitants. For such a town the finest possible result, both for practical purposes and for effect, is to be had by the concentration of business and the necessary public activities (municipal, provincial, and national) in a single, close-knit composition. The best spot for such a group is the Baguio plain, developed by two higher plateaus—out toward the “tribunal”^a for municipal functions, the other toward Governors Hill for the national functions.

The Baguio plain furnishes the one practical site for business activities, and, while closely connected with the municipal center, will remain subservient to it. The national group, while in view of business and within easy reach, will nevertheless frankly dominate everything in sight of it. The other inclosing hills furnish locations for various semipublic functions whose buildings, of monumental character, will be in view of one another. The total effect of this whole arrangement—the business center surrounded by a crown of monumental buildings, the whole dominated by the group of national buildings, could be made equal to anything that has ever been done.

If one will imagine the long main axis, expended by an open green esplanade, stretching down from the municipal group through the business town and up to the green slopes to the dominant government center on the high hills; imagine certain transverse axis crossing the town and leading up the inclines to important buildings on the flanking hills; look for the green play fields here and there and picture the entire composition hemmed in by the pine ridges of the highest hills, and one will have before him an architectural group of unsurpassed effect and a business machine of the utmost efficiency.

If this scheme is adopted, the outlying sites such as Pakdal, and the slopes toward Trinidad and the sea will remain available for villas and such semipublic institutions as schools, universities, hospitals, and sanitarium, whose functions call for detachment from the active center.

Looking at the map more in detail one will notice that while the view of the national group from the plain is up an incline with steps, the main approach for vehicles is by means of a street to the northeast along the hillside.

The official residence of the governor-general is indicated on the hill above the present sanitarium. This site puts him in contact with the principal centers and makes him formally a part of the visible governmental powers. The residence of the major-general commanding the Department of the Philippines, is similarly located on the opposite side of the main axis. Another available site—in case the governor-general should prefer to live farther from official activities—would be the spot marked “Outlook Point” at the end of the Pakdal plateau.

The ecclesiastical center—cathedral with archbishop’s residence and other buildings—might find a good location on the triangular-shaped hill north of the present Baguio.

The hotel site is difficult to locate at present since it ought to be in close contact with the town, and the town building lines must remain undetermined for some time to come.

^a By the “tribunal” is meant the present court-house near the constabulary buildings.

A suitable location would be on the high ground north of the town and not far from the present road to Trinidad.

Small residences should dot the lower slopes of the foothills whose summits carry more monumental structures.

Pakdal site has been indicated as the best place on that side of the town for the residence of the more wealthy people. It is shown cut up into building lots of from 3 to 10 acres with the idea of making it a fashionable quarter.

Pending completion of surveys, the surroundings of the Baguio plain have been for the most part left untouched, and for the same reason no attempt has been made to lay out a system of roads covering the entire reservation. This preliminary plan is intended merely as an outline of the general scheme; it does not represent a study of engineering requirements or other details.

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